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DEPARTMENT OF ARCHIVES

GOVERNMENT OF MAHARASHTRA, MUMBAI.

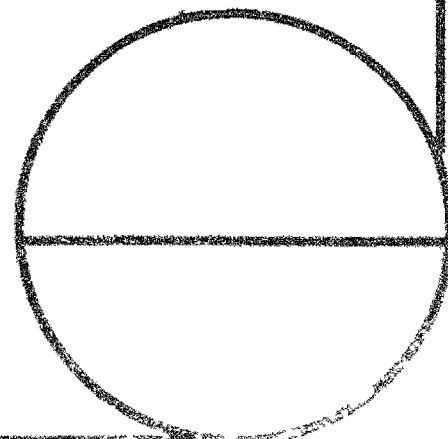
NAME OF RECORD : REVENUE DEPTT. VOL.

NO : 24.

YEAR : 1880

EXPOSED BY : ANIL SAWANT

DATE : 06/10/2007



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 11. *Essential oils*
 12. *Resins*
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 17. *Proteins*
 18. *Nucleic acids*
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Ag. Secy. to the

Report of the Secy. of the
Experimental Station
Bangalore on the cultivation
of the new and various
cattle breeds

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95. 2008-09
96. 2009-10
97. 2010-11
98. 2011-12
99. 2012-13
100. 2013-14

1880.

Rev. Dept.

No. 462

Agricultural Improvement

Report of the Board of the
Experimental Farm at
Beltsville on the cultivation
of various kinds of crops and
the management of the same

Former Papers in Comp. No.	18
Subsequent	No. 18

2
62/71

Extract from the Proceedings of the Government of India in the Home, Revenue and Agricultural Departments (Agriculture and Horticulture), No. 10,000, Part VII, Vol. 1, No. 1, dated 1st January 1900.

READ—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half year ending the 31st December 1898, regarding certain experiments made with cattle manure in the cultivation of the following crops:

Read also—

An article in the Indian Agriculture of the 1st September 1899, on the subject of manures and their effects.



OBSERVATIONS

The Governor General in Council is of opinion that experiments, similar to those made on the Bangalore Farm, might profitably be undertaken in other parts of India by officers in charge of public gardens, jail gardens or Government or Municipal farms. A careful record of such experiments should be kept, and in account of them, including a table of statistics in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by local Governments and Administrations to this Department.

2. The most useful experiments would be those which have for their object the improvement of processes already adopted by cultivators, or the utilization as nutritive manures of the various products of the country. They should be conducted on a uniform system, and should consist (1) in cultivating equal areas of manured and unmanured soil of the same kind, under the same conditions, with the same crops; (2) in cultivating different crops on equal areas of manured and unmanured soil of the same kind, under the same conditions; (3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions of the processes, or processes of preparation.

General Order of the Government of India, Home, Revenue and Agricultural Departments, No. 10,000, Part VII, Vol. 1, No. 1, dated 1st January 1900.

Secretary to the
Government of India

32
No. 277/15

Extract from the Report of the Commissioner of the Bengal and Bihar Provinces
for the half year ending 31st March 1915, regarding certain
experiments made with wheat at the Agricultural Station, Lucknow,
during 1914.

Read also—

A report by the Deputy Assistant of the Agricultural Station, Lucknow,
for the half year ending 31st March 1915, regarding certain
experiments made with wheat at the Agricultural Station, Lucknow,
during 1914.

Read also—

An extract from the Report of the 1st Deputy Assistant of the
Agricultural Station, Lucknow, for the half year ending 31st March 1915,
regarding certain experiments made with wheat at the Agricultural Station,
Lucknow, during 1914.



OBSERVATIONS.

The Governor General in Council is of opinion that experiments, similar to those made on the Bangalore Farm, might usefully be undertaken in other parts of India by officers in charge of public gardens, jail gardens or Government or Municipal farms. A careful record of such experiments should be kept, and an account of them, including a table of results, in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by Local Governments and Administrations to this Department.

2. The most useful experiments would be those which have for their object the improvement of processes already adopted by cultivators, or the utilization as nutritive manures of the common products of the country. They should be conducted on a uniform system, and should consist (1) in cultivating equal areas of manured and unmanured soil of the same land, under the same conditions, with the same crop; (2) in cultivating different crops, in equal areas of manured and unmanured soil of the same land, under the same conditions; (3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions, as of the presence or absence of irrigation.

ORDER.—Ordered that a copy of this Resolution and of the Report of the Deputy Assistant of the Agricultural Station, Lucknow, for the half year ending 31st March 1915, regarding certain experiments made with wheat at the Agricultural Station, Lucknow, during 1914, be forwarded to the Local Governments and Administrations for their consideration and action.

11th March 1915

C. S. S. S. S.

Chief Secretary to the Government of India

Secretary to the
Government of India

Excerpt from the Proceedings of the Government of India in the House, Revenue and Agricultural Department (Agriculture and Horticulture), dated 12th January 1938, Fort William, the 12th January 1938.

Read—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half year ending the 31st December 1937, regarding various experiments made with cattle manure in the cultivation of Opium and maize.

Read also—

An article in the *Indian Agriculturalist* of the 1st September 1937, on the subject of manure and their classification.

OBSERVATIONS.

The Governor-General in Council is of opinion that experiments, similar to those made on the Bangalore Farm, might usefully be undertaken in other parts of India by officers in charge of public gardens, jail gardens or Government or Municipal farms. A careful record of such experiments should be kept, and an account of them, including a table of statistics in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by Local Governments and Administrations to this Department.

2. The most useful experiments would be those which have for their object the improvement of processes already adopted by cultivators, or the utilization of nutritive manures of the common products of the country. They should be conducted on a uniform system, and should consist (1) in cultivating equal areas of manured and unmanured soil of the same kind, under the same conditions, with the same crop; (2) in cultivating different crops in equal areas of manured and unmanured soil of the same kind, under the same conditions; (3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions, as of the presence or absence of irrigation.

ORDER.—Ordered that a copy of this Resolution, and of the papers read in the preamble, be forwarded to Local Governments and Administrations for information and guidance.

(For Extract)

C. A. R. S. S. S.

Off. Sec. to Govt. of India

Enclosure to the
Hon. Sec. to Govt. of India

Extract from the Proceedings of the Government of India in the Home, Revenue and Agricultural Departments (Agriculture and Horticulture), under date 1st April 1879, the 12th January 1879

Read—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half year ending the 31st December 1878, regarding certain experiments made with cattle manure in the cultivation of Guano-land maize.

Read also—

An article in the *Indian Agriculturist* of the 1st September 1879, on the subject of manures and their classification.

OBSERVATIONS.

The Governor General in Council is of opinion that experiments, similar to those made on the Bangalore Farm, might usefully be undertaken in other parts of India by officers in charge of public gardens, jail gardens or Government or Municipal farms. A careful record of such experiments should be kept, and an account of them, including a table of statistics in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by Local Governments and Administrations to this Department.

2. The most useful experiments would be those which have for their object the improvement of processes already adopted by cultivators, or the utilization as nutritive manures of the common products of the country. They should be conducted on a uniform system, and should consist (1) in cultivating equal areas of manured and unmanured soil of the same kind, under the same conditions, with the same crop; (2) in cultivating different crops in equal areas of manured and unmanured soil of the same kind, under the same conditions; (3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions, as of the presence or absence of irrigation.

ORDER.—Ordered that a copy of this Resolution, and of the papers read in the preamble, be forwarded to Local Governments and Administrations* for information and guidance.

(FIVE PARTS)

C. A. Green

Offg. Secretary to the Govt. of India

10/1/79
10/1/79

Extract from the Proceedings of the Government of India in the Home, Revenue and Local Government Department (Agriculture, and Horticulture), dated 1st December, 1878.

Read—

A report by the Superintendent of the Experimental Farm at Bangalore for the year ending the 31st December 1878, regarding (a) the experiments made with earth manure, (b) the cultivation of various kinds of manure.

Read also—

An article in the *Indian Agriculture* of the 1st September 1878, on the subject of manures and their application.



OBSERVATIONS.

The Governor General in Council is of opinion that experiments similar to those made on the Bangalore Farm, might usefully be undertaken in other parts of India by officers in charge of public gardens, jail gardens, Government or Municipal farms. A careful record of such experiments should be kept, and an account of them, including a table of statistics in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by Local Governments and Administrations to this Department.

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ORDER.—Ordered that a copy of this Resolution, and of the papers read in the presence of the Governor General, be forwarded to the Local Governments and Administrations for their consideration.

(In the Extract)

C. Alcock

(In the Extract)

... to the ...

*Report on an experiment of the value of cattle manure during half
year ending 31st December 1878.*

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartments, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residue from the “belly”, or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass, without any gram, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 15th April, and harvested for the sale of the green cobs 15th of August.

The rain-fall during the period of growth was 3.85 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre

No. of Plot	Manure used	Cattle		Ashes		Total
		Weight	Value	Weight	Value	
I. No. I	Cattle box manure	2000	1.00	2000	1.00	2.00
No. II	Dr. (Native)	2000	1.00	2000	1.00	2.00
No. III	Native (from field)	2000	1.00	2000	1.00	2.00
No. IV	Native (from field)	2000	1.00	2000	1.00	2.00

Report on an experiment of the value of cattle manure during the year ending 31st December 1878

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the "belly", or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of sowing the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass, without any gram, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in two two feet apart on the 15th April, and harvested for the sale of 16 green cobs 15th of August.

The rain-fall during the period of growth was 38.5 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre—

No.	Description of Manure	Yield of Maize (Green Cobs)		
		1878	1879	1880
I	Cattle box manure	4.2	4.2	4.2
II	Dry cow dung + ashes	4.1	4.1	4.1
III	As from I + 1/2 lb. of 1878	4.2	4.2	4.2
IV	Manure	3.8	3.8	3.8

Report on an experiment of the value of cattle manure during half year ending 31st December 1878.

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. 11, was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the “brelly”, or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass, without any gram, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 15th April, and harvested for the sale of the green cobs 15th of August.

The rain-fall during the period of growth was 3.85 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre

Name of plot	Manure used	Yield		Difference	
		Grain	Stalks	Grain	Stalks
Plot No. I	Cattle-box manure	11.0	4.1	1.0	1.0
N. 11	Plot cow dung + ashes	11.5	4.1	1.1	1.2
N. 111	Plot from 50 lbs cow + 100	12.1	4.7	1.5	1.5
N. 114	Plot from 50 lbs cow + 100	12.6	5.0	1.6	1.6

*Report on an experiment of the value of cattle manure during half
year ending 31st December 1878.*

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the "brelly", or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass, without any grain, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 15th April, and harvested for the sale of the green cobs 15th of August.

The rain-fall during the period of growth was 3.53 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre:

Number of plot	Manure per acre	2 1/2 ft		d
		ft	ft	
Plot No. I	Cattle box manure	4.22	4.22	4.22
No. II	Dry cow dung	4.22	4.22	4.22
No. III	Lowest class of cow dung	4.22	4.22	4.22
No. IV	Plot A	4.22	4.22	4.22

Report on an experiment of the value of cattle manure during half year ending 31st December 1878.

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The rain-fall during the period of growth was 3.55 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre:

Plot No.	Manure	Wt. in cwt.	Wt. in lbs.	Wt. in tons	Wt. in cwt.
I	Cattle box manure	20	360	8	16
II	Dry cow dung	20	360	8	16
III	Ashes from Cattle box manure	20	360	8	16
IV	Plough	20	360	8	16

The small quantity of manure employed, the minimum of water used, and the comparatively poor soil to which they were applied, fully account for the light yield, but the comparative result is very clear.

The yield of the cattle-box manure, both in cobs and fodder of 74 per cent. and 71 per cent., respectively, over the unmanured plot, is remarkably high, the manure being well rotted and taken from the lowest part of the pit where it was thoroughly saturated with urine.

The slight increase of four per cent. given by the ashes over cattle-dung manure is due to the forcing action of the former, the whole of the constituents being released from the organic combinations they were held as inassimilable vegetable matter. But as the dung of an animal has been proved by careful experiments in Europe to contain only about one-fourth of the plant food voided in both dung and urine, it is not surprising to find the result of its action far less energetic than when both are combined, as in the case of the cattle-box manure. The actual decrease of fodder, when ashes were employed, is curious. The plant probably suffered under the too stimulating action of ashes, from insufficient moisture, though the amount given, when aided by the organic matter combined both in the dried cow-dung and the cattle-box manure, was adequate. The frequent waterings asserted as necessary for maize by Native gardeners round Bangalore are probably largely due to their partiality for ashes as a manure, for on this farm where cattle-box manure is chiefly employed, and where a deeper cultivation is given, crops are raised with a considerably smaller amount.

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MANURES AND THEIR CLASSIFICATION.

THERE are three methods adopted to maintain and improve the fertility of soils:

1st.—Fallowing.

2nd.—Rotation of crops.

3rd.—Manuring.

The soil contains an inexhaustible supply of mineral food, not of course all available at once, but only so much of it as the natural processes of disintegration, mechanical and chemical, are constantly liberating. It may, we think, be as safely accepted that the air, water, and the soil contain an equally inexhaustible store of organic food.

It has been held that ammonia (nitrogen) exists in nature in such quantities that, with farmyard manure, it is quite unnecessary to supply it (nitrogen) in artificial manures.

The following experiment, conducted by Mr. Lawes, extending over eighteen years, we think may be held as conclusive in the matter:

Two plots of land, side by side, for eighteen years were manured alternately with ammonia salts and phosphato of lime. In 1832 plot No. 1 was treated with ammonia, plot No. 2 received superphosphate. In 1853 No. 1 got superphosphate, and No. 2 ammonia; and so on for eighteen years. Thus, each plot had been nine times manured with ammonia and nine times with mineral phosphates. Over the whole time the average produce of both was exactly the same, 21½ bushels; but the average of the eighteen crops grown by mineral manure alone, whether on plots No. 1 or No. 2, was only 17½ bushels; whilst the average of the 18 crops grown on either plot by ammonia salts was 31½ bushels, being an increase of nearly 14 bushels per acre more each year. These results, confirmed by Voelcker, and tested by the practice of agriculturists, in a general way, may be safely accepted as conclusive.

Whatever may have been the practice in times gone by, when land was cheap, and held on favourable terms, with comparatively little machinery in use for agricultural purposes, and when competition had not assumed the proportions that render it imperatively necessary for the agriculturist to avail himself of every legitimate means of increasing the weight and quality of crops,—when agriculture had no existence as science, except in the brain and practice of a few men much in advance of their time, like Blainville, of Cumberland, who sowed those ideas which the clear-headed tenant-farmers of Cumberland and the North have certainly not let die, and who side by side with Joseph Hume, in the days long before liberalism became fashionable, protested, session after session, against extravagance, corruption, and incompetency,—certainly now-a-days, when the struggle for existence and the survival of the fittest are facts brought home to most men's consciousness, every possible means that may fairly be used to meet the exigencies of the present ought to be carefully studied and brought into practice.

Manures may be classified in several ways, according to the view-point of the classifier. They may be classified in the three following ways, with sufficient exactitude to answer most purposes: 1st, as to their origin, 2nd, as to their composition, 3rd, as to their uses.

The small quantity of manure employed, the minimum of water used, and the comparatively poor soil to which they were applied, fully account for the light yield, but the comparative result is very clear.

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First, as to their *origin*; they may be regarded as, either 1st, natural; or 2nd, artificial. This division makes a clear distinction between all substances used as manures which are produced without man's intervention, and those which are the product of the ingenuity of man. Under the former, natural manures, such widely different substances as farm manures, guano, nitrate of soda, lime, and natural products such as these, are classed together, although in another view, guano, nitrates, lime, &c., though natural products, are nevertheless artificial manures. More correctly speaking, however, the term artificial might be used to indicate those substances manipulated by the art of man to serve his purposes; and they would embrace every manufactured substance introduced as a fertilizer, such as dissolved bones, and mineral and bone superphosphates of all kinds, as well as those compounds prepared by manufacturers to meet the wants of particular crops—tea, indigo, coffee, grass, potato, turnips, &c., and sold under various names. Manures might also be classified either as to their origin or composition, as—1st, animal; 2nd, vegetable; or 3rd, mineral: a classification of this kind, however, is of so vague and general a character as to render it of little practical use.

Second. Manures may be classified as to their composition, as either—1st, general; or 2nd, special. A general manure is one which will supply to the soil, and consequently to the crops grown on the soil, sufficient plant-food of all kinds, to keep up the continual fertility of the land. Beef, mutton, wool, wheat, indigo, tobacco, tea, coffee, &c., cannot be taken year by year from the soil; cannot be sold off the land, and leave it in the same position it was before this process began. The speed with which crops and products of various kinds are prepared for the market is much in advance of the slow natural agencies which are continually acting on the dormant constituents of the soil, and changing them into soluble plant-food. A general manure prevents, or at least retards, the consumption of the plant-food in the soil, and makes it possible to go on producing crop after crop, with as much speed as the natural laws which govern its production will admit of. If added in sufficient abundance, it may enrich and otherwise barren or profitless soil, and so enable it to bear a crop that will more than pay the cost of production. General manures, then, must always be the most important, and no others would be used were it possible to obtain manures with the exact composition of the crops to be raised; this, however, cannot be accomplished, and so it comes to pass that there are always accumulating in the soil vast stores of plant-food, put in year by year in general manures and not removed by successive crops, hence the use of some special manure which, while containing only one important food, deficient in the soil, will enable the crop to take up the abundance of the others which the soil has accumulated or the general manure supplied. Farm manure stands at the head of all general manures. It thoroughly restores to a soil the power of reproducing the same crops. If supplied in sufficient quantities, it completely arrests exhaustion, and restores fertility. It consists of the straw used for litter, and the solid and fluid excrements of the animals bred and used on the farm. The excrements are the waste products of digestion, absorption, and assimilation; and if the food of stock be rich in mineral matter, the bulk of the mineral constituents will re-appear in the excrements. Only a small fraction of the mineral substances contained in the food of men and animals is retained in their bodies after they have attained their full growth. When their bodies have been built up to their full size, the mineral substances contained in the excrements are almost identical with those

contained in the food. If swine are fed on potatoes, their dung contains the mineral constituents of potatoes. The dung of horses contains the mineral matter of the hay, oats, &c., on which they are fed; and it is the same with cattle. The manurial value of their dung will vary with their food, and with the stage at which they have arrived in their progress to maturity, the dung of lean and young animals being least valuable, because they retain in their systems the substances necessary to build them up. When the building process is completed, all that is wanted in food is to repair the waste tissues of their bodies. Farm manure is valuable, not only for its mineral constituents, but also for the large quantities of organic matter, nitrogen chiefly, thrown off by animals in the action of their vital functions. It has been calculated that 20 tons of farm manure contain 2½ cwt. of nitrogen, and if a four-year's rotation is assumed, this quantity is probably amply sufficient to supply the whole course. In addition to this, it should not be forgotten that there are vast quantities of ammonia, N. H. 3 and nitric acid absorbed by the soil and carried down into it by rain and dews; with the application of farm manure, then, there may fairly be supposed to be a gradual increase of valuable plant-food to the soil, and all other things being equal, a continual improvement of its productive powers.

2nd.—*Special manures* are those which contain chiefly one plant-food, though others may be present. They are only fitted to supply plant-food of a special kind, such as potash, nitrogen or phosphorus. It must not, however, be supposed that they do nothing more; in every special manure there are always other ingredients, which, while they add nothing, or very little, to their market value, are of great use to the soil in helping to bring about its disintegration; and which play important parts in the decomposition and formation of compounds in the soil. It should, however, be borne in mind that they are valuable chiefly, if not solely, from a commercial point of view, for their potash, nitrogen or phosphorus, and that they should be supplied to soils where there is good reason to believe that these substances are deficient, or where their application would bring into usefulness other plant-foods in which the land abounds. H

Farm manure may be used year after year in a perfectly mechanical fashion, and as a matter of course; but special manures demand thought and skill in watching results and arriving at conclusions. The agriculturist who observes and experiments with intelligence on the effects of special manures, is in a fair way of making the most out of his land in the shortest time, and with the greatest profit. It is in the use of special manures, however, nitrates, lavites and phosphates, especially the two former, that most unfortunate mistakes have been made by well-meaning men attempting to follow the practice, the successful practice, of some one who has made them his study, and so acquainted himself with all the conditions of success in their application. These conditions are so many and varied, and have reference to the character of soils, subsoils and indigenous vegetation, which sometimes vary over comparatively small areas, that the indiscriminate application of special manures has frequently been followed by disappointment and loss, sufficiently heavy to raise up a feeling of antagonism to what is called high farming and scientific farming,—a feeling which the conservative tendencies alone of such a profession as that of agriculture were sufficient to rouse, without any additional element of distrust being brought into play, in the failure of imperfectly performed practical experiments. No physician, either in England or elsewhere, over the age of forty, ever believed in Harvey and his theory of the circulation of the blood. Younger men rejected the great discovery, and their elders lived and died in the old faith.

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2nd.—*Special manures* are those which contain chiefly one plant-food, though others may be present. They are only fitted to supply plant-food of a special kind, such as potash, nitrogen or phosphorus. It must not, however, be supposed that they do nothing more; in every special manure there are always other ingredients, which, while they add nothing, or very little, to their market value, are of great use to the soil in helping to bring about its disintegration; and which play important parts in the decomposition and formation of compounds in the soil. It should, however, be borne in mind that they are valuable chiefly, if not solely, from a commercial point of view, for their potash, nitrogen or phosphorus, and that they should be supplied to soils where there is good reason to believe that these substances are deficient, or where their application would bring into usefulness other plant-foods in which the land abounds.

Farm manure may be used year after year in a perfectly mechanical fashion, and as a matter of course; but special manures demand thought and skill in watching results and arriving at conclusions. The agriculturist who observes and experiments with intelligence on the effects of special manures, is in a fair way of making the most out of his land in the shortest time, and with the greatest profit. It is in the use of special manures, however, nitrates, kainites and phosphates, especially the two former, that most unfortunate mistakes have been made by well-meaning men attempting to follow the practice, the successful practice, of some one who has made them his study, and so acquainted himself with all the conditions of success in their application. These conditions are so many and varied, and have reference to the character of soils, subsoils and indigenous vegetation, which sometimes vary over comparatively small areas, that the indiscriminate application of special manures has frequently been followed by disappointment and loss, sufficiently heavy to raise up a feeling of antagonism to what is called high farming and scientific farmers,—a feeling which the conservative tendencies alone of such a profession as that of agriculture were sufficient to rouse, without any additional element of distrust being brought into play, in the failure of imperfectly performed practical experiments. No physician, either in England or elsewhere over the age of forty, ever believed in Harvey and his theory of the circulation of the blood. Younger men accepted the great discovery, and their elders lived and died in the old faith.

First, as to their *origin*; they may be regarded as either 1st, natural; or 2nd, artificial. This division makes a clear distinction between all substances used as manures which are produced without man's intervention, and those which are the product of the ingenuity of man. Under the former, natural manures, such widely different substances as farm manures, guano, nitrate of soda, lime, and natural products such as these, are classed together, although in another view, guano, nitrates, lime, &c., though natural products, are nevertheless artificial manures. More correctly speaking, however, the term artificial might be used to indicate those substances manipulated by the art of man to serve his purposes; and they would embrace every manufactured substance introduced as a fertilizer, such as dissolved bones, and mineral and bone superphosphates of all kinds, as well as those compounds prepared by manufacturers to meet the wants of particular crops—tea, indigo, coffee, grass, potato, turnips, &c., and sold under various names. Manures might also be classified either as to their origin or composition, as—1st, animal; 2nd, vegetable; or 3rd, mineral: a classification of this kind, however, is of so vague and general a character as to render it of little practical use.

Second. Manures may be classified as to their composition, as either—1st, general; or 2nd, special. A general manure is one which will supply to the soil, and consequently to the crops grown on the soil, sufficient plant-food of all kinds, to keep up the continual fertility of the land. Beef, mutton, wool, wheat, indigo, tobacco, tea, coffee, &c., cannot be taken year by year from the soil; cannot be sold off the land, and leave it in the same position it was before this process began. The speed with which crops and products of various kinds are prepared for the market is much in advance of the slow natural agencies which are continually acting on the dormant constituents of the soil, and changing them into soluble plant-food. A general manure prevents, or at least retards, the consumption of the plant-food in the soil, and makes it possible to go on producing crop after crop, with as much speed as the natural laws which govern its production will admit of. If added in sufficient abundance, it may enrich and otherwise barren or profitless soil, and so enable it to bear a crop that will more than pay the cost of production. General manures, then, must always be the most important, and no others would be used were it possible to obtain manures with the exact composition of the crops to be raised; this, however, cannot be accomplished, and so it comes to pass that there are always accumulating in the soil vast stores of plant-food, put in year by year in general manures and not removed by successive crops, hence the use of some special manure which, while containing only one important food, deficient in the soil, will enable the crop to take up the abundance of the others which the soil has accumulated or the general manure supplied. Farm manure stands at the head of all general manures. It thoroughly restores to a soil the power of reproducing the same crops. If supplied in sufficient quantities, it completely arrests exhaustion, and restores fertility. It consists of the straw used for litter, and the solid and fluid excrements of the animals bred and used on the farm. The excrements are the waste products of digestion, absorption, and assimilation; and if the food of stock be rich in mineral matter, the bulk of the mineral constituents will re-appear in the excrements. Only a small fraction of the mineral substances contained in the food of men and animals is retained in their bodies after they have attained their full growth. When their bodies have been built up to their full size, the mineral substances contained in the excrements are almost identical with those

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2nd.—*Special manures* are those which contain chiefly one plant-food, though others may be present. They are only fitted to supply plant-food of a special kind, such as potash, nitrogen or phosphorus. It must not, however, be supposed that they do nothing more; in every special manure there are always other ingredients, which, while they add nothing, or very little, to their market value, are of great use to the soil in helping to bring about its disintegration; and which play important parts in the decomposition and formation of compounds in the soil. It should, however, be borne in mind that they are valuable chiefly, if not solely, from a commercial point of view, for their potash, nitrogen or phosphorus, and that they should be supplied to soils where there is good reason to believe that these substances are deficient, or where their application would bring into usefulness other plant-foods in which the land abounds.

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Much the same thing happens with most great truths: they have to fight their way upward to practical recognition. In this respect special and artificial manures are no exception.

The following are the chief special manures in the market. It should be borne in mind that special is here used in opposition to general, and that the designation artificial is much more commonly applied to them:

ARTIFICIAL OR SPECIAL MANURES.

Ammoniacal or Nitrogenous Manures.

Peruvian guano.	Manure cakes (rape).
Ohlendorf guano.	Wool manure (shoddy).
Ammonia-fixed guano.	Grease cakes (refuse).
Ichaboe guano.	Dried blood.
Nitrate of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POASH MANURES.

Kainite or crude potash.	Muriate of potash.
Cultured manure.	Sulphate of potash.

PHOSPHATIC MANURES

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apatite.	Phosphate guano.

There remains to be shortly noticed the classification of manures as to their uses. With regard to the effect produced on the soil and crop, manures may be classified as—1st, stimulating; 2nd, nutritive, and 3rd corrective. All ammoniacal manures may be classed as stimulating (see table above); and in its general action on the soil, lime may also fall under this head. Nutritive manures are those whose special function it is to supply a variety of plant-food, so that farm manures, general manures, would be classed under this head. There is, of course, no manure which does not supply plant-food of some kind, in more or less abundance; but the term nutritive could not be applied with correctness to the artificial or special manures enumerated above, whose special functions are by supplying one kind of plant-food to enable the crop to take up large quantities of others stored in the soil. Stimulating manures, instead of retarding or preventing the exhaustion of the soil, quicken it, by enabling the crop to take up greater quantities of plant-food in a shorter period than without their use could be effected.

3rd.—*Corrective* manures are those whose application to land acts beneficially on some injurious substance, such as an acid, present in undue quantities in the humus, and it may be by liberating the double silicates already referred to in a former article, thus provide abundant food for a higher and more nutritious class of indigenous plants, which ultimately drive out less desirable ones. The judicious and combined application of salt and lime to properly-drained marsh and low-lying pasture lands is something marvellous, and requires to be seen before it can be realised in its entirety.

The uses of lime and salt as corrective manures are of the very highest value; and the application of artificial manures of the costliest kind would probably be utterly useless, a waste of money and labour, until a change had been effected on the indigenous vegetation of the land. In salt the agriculturist possesses a substance by means of which he can regulate, to a great extent, the growth of the stem in all cereals.

Manures manufactured and sold to suit the requirements of special crops are probably increasing in demand. There are, however

so many conditions necessary to success in producing an article of this kind, that there need be no wonder if they sometimes do not come up to the expectations of the purchaser.

Agriculturists themselves are probably the best parties to observe and experiment on the value of manures prepared to meet the requirements of special crops. It is only just to manufacturers to say that excellence in the preparation of special manures has been arrived at by very careful researches, and by the mingling together of fertilizing matter in those proportions and combinations which experience has proved likely to produce beneficial effects. It is not the interest of the manufacturer to supply worthless stuff. It is his interest to prepare the purest, cheapest, and best special manure that a careful watching of the markets, and a wide experience of the requirements of a special crop, can command. The conditions of success are, however, as we have said, so numerous and varied, that we may hopefully look for a greater development of this class of manure based on a wider and longer experience.

SPECIAL MANURES.

(1)— <i>For wheat, barley or rye—</i>	(4)— <i>Manure for tea, coffee and indigo—</i>
2½ cwt. mineral superphosphate.	30 per cent. of soluble alkalies, chloride of potassium and sodium, and sulphate of potash.
2 " sulphate of ammonia.	20 " " lime and magnesite.
(2)— <i>Potato manure—</i>	7 " " Phosphoric acid, equal to 15 per cent. of phosphate of lime.
4 cwt. mineral superphosphate.	The remainder being sulphuric acid, iron carbonate, organic nitrogenous matter and silica.
2 " potash salts.	
2 " sulphate of ammonia or nitrate of soda.	
(3)— <i>For grass lands deficient in potash—</i>	
2 cwt. mineral superphosphate.	
1 " sulphate of ammonia.	
2 " calcined kaolin.	

The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

In the classification in common use, the term artificial is confined to that class of manures which have come into use during the last forty years. Some of these are in reality natural products, such as guano, nitrate of soda, and kainite, and are misnamed when called artificial; the phosphates of lime and the ammonia sulphates are manufactured products, and are correctly named when called artificial. Limes, chalks and marls, which have been in use for ages, are correctly called natural. Farm manures are classed alone. Green manures have been in use in various parts of Europe from very early times. A crop is grown on the soil which is not taken off, but ploughed in. In Northern Germany farmers plough in spurrey or lupin to obtain a good crop of rye from a light sandy soil. In America clover and Indian corn are used for this purpose. The plants best suited for green manuring are those which in a given time will produce the greatest amount of valuable available plant-food with least labour and cost. In England spurrey mustard and turnips are used. Green manuring adds no new mineral matter to the soil, it simply brings to the surface from greater or less depth material already existing, and spreads it out to meet the requirements of the succeeding crop. In addition to this, the crop used as a green manure extracts from the air valuable organic substances which are given up to the soil when the decomposition of the ploughed-in crop sets in. In green manuring there is an accumulating of mineral food, and a clear gain in organic matters.

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ARTIFICIAL OR SPECIAL MANURES.

Ammoniacal or Nitrogenous Manures.

Peruvian guano.	Manure cakes (capon).
Ohlendorf guano.	Wool manure (shoddy).
Ammonia-fixed guano.	Grass cakes (refuse).
Ichaboe guano.	Dried blood.
Nitrate of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POTASH MANURES.

Kainite or crude potash.	Muriate of potash.
Calcined kainite.	Sulphate of potash.

PHOSPHATIC MANURES.

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apatite.	Phosphatic guano.

There remains to be shortly noticed the classification of manures as to their uses. With regard to the effect produced on the soil and crop, manures may be classified as—1st, stimulating; 2nd, nutritive; and 3rd corrective. All ammoniacal manures may be classed as stimulating (see table above); and in its general action on the soil, lime may also fall under this head. Nutritive manures are those whose special function it is to supply a variety of plant-food, so that farm manures, general manures, would be classed under this head. There is, of course, no manure which does not supply plant-food of some kind, in more or less abundance; but the term nutritive could not be applied with correctness to the artificial or special manures enumerated above, whose special functions are by supplying one kind of plant-food to enable the crop to take up large quantities of others stored in the soil. Stimulating manures, instead of retarding or preventing the exhaustion of the soil, quicken it, by enabling the crop to take up greater quantities of plant-food in a shorter period than without their use could be effected.

3rd.—*Corrective* manures are those whose application to land acts beneficially on some injurious substance, such as an acid, present in undue quantities in the humus, and it may be by liberating the double silicates already referred to in a former article, thus provide abundant food for a higher and more nutritious class of indigenous plants, which ultimately drive out less desirable ones. The judicious and combined application of salt and lime to properly-drained marsh and low-lying pasture lands is something marvellous, and requires to be seen before it can be realised in its entirety.

The uses of lime and salt as corrective manures are of the very highest value; and the application of artificial manures of the costliest kind would probably be utterly useless, a waste of money and labour, until a change had been effected on the indigenous vegetation of the land. In salt the agriculturist possesses a substance by means of which he can regulate, to a great extent, the growth of the stem in all cereals.

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SPECIAL MANURES

(1)— <i>For wheat, barley or rye—</i>	(4)— <i>Manure for tea, coffee and indigo—</i>
2½ cwt. mineral superphosphate.	30 per cent. of soluble alkaline chloride of potassium and sodium, and sulphate of potash.
2 " sulphate of ammonia.	20 " " Lime and magnesia.
(2)— <i>Potato manure—</i>	7 " " Phosphoric acid, equal to 15 per cent. of phosphate of lime.
4 cwt. mineral superphosphate.	The remainder being sulphuric acid, iron carbonate, organic nitrogenous matter and silica.
2 " potash salts.	
2 " sulphate of ammonia or nitrate of soda.	
(3)— <i>For grass lands deficient in potash—</i>	
2 cwt. mineral superphosphate.	
1 " sulphate of ammonia.	
2 " calcined kainite	

The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

In the classification in common use, the term artificial is confined to that class of manures which have come into use during the last forty years. Some of these are in reality natural products, such as guano, nitrate of soda, and kainite, and are misnamed when called artificial; the phosphates of lime and the ammonia sulphates are manufactured products, and are correctly named when called artificial. Limes, chalks and marls, which have been in use for ages, are correctly called natural. Farm manures are classed alone. Green manures have been in use in various parts of Europe from very early times. A crop is grown on the soil which is not taken off, but ploughed in. In Northern Germany farmers plough in spurrey or lupin to obtain a good crop of rye from a light sandy soil. In America clover and Indian corn are used for this purpose. The plants best suited for green manuring are those which in a given time will produce the greatest amount of valuable available plant-food with least labour and cost. In England spurrey mustard and turnips are used. Green manuring adds no new mineral matter to the soil, it simply brings to the surface from greater or less depth material already existing, and spreads it out to meet the requirements of the succeeding crop. In addition to this, the crop used as a green manure extracts from the air valuable organic substances which are given up to the soil when the decomposition of the ploughed-in crop sets in. In green manuring there is an accumulating of mineral food, and a clear gain in organic matters.

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Old-world guano.	Wool manure (shoddy).
Ammonia-fixed guano.	Grass cakes (refuse).
Lake-doo guano.	Dried blood.
Nitrates of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POTASH MANURES.

Kainite or crude potash.	Muriate of potash.
Calcined kainite.	Sulphate of potash.

PHOSPHATIC MANURES.

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apulite.	Phosphate guano.

There remains to be shortly noticed the classification of manures as to their uses. With regard to the effect produced on the soil and crop, manures may be classified as—1st, stimulating; 2nd, nutritive; and 3rd corrective. All ammoniacal manures may be classed as stimulating (see table above); and in its general action on the soil, lime may also fall under this head. Nutritive manures are those whose special function it is to supply a variety of plant-food, so that farm manures, general manures, would be classed under this head. There is, of course, no manure which does not supply plant-food of some kind, in more or less abundance; but the term nutritive could not be applied with correctness to the artificial or special manures enumerated above, whose special functions are by supplying one kind of plant-food to enable the crop to take up large quantities of others stored in the soil. Stimulating manures, instead of retarding or preventing the exhaustion of the soil, quicken it, by enabling the crop to take up greater quantities of plant-food in a shorter period than without their use could be effected.

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SPECIAL MANURES.

(1)—For wheat, barley or rye—

2½ cwt. mineral superphosphate.
2 " sulphate of ammonia.

(2)—Potato manure—

4 cwt. mineral superphosphate.
2 " potash salts.
2 " sulphate of ammonia or nitrate of soda.

(3)—For grass lands deficient in potash—

2 cwt. mineral superphosphate.
1 " sulphate of ammonia.
2 " calcined kainite.

(4)—Manure for tea, coffee and indigo—

50 per cent. of soluble alkalies, chlorides of potassium and sodium, and sulphate of potash.

20 " " lime and magnesia.

7 " " Phosphoric acid, equal to 15 per cent. of phosphate of lime.

The remainder being sulphuric acid, free carbon dioxide, organic nitrogenous matter and silica.

The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

In the classification in common use, the term artificial is confined to that class of manures which have come into use during the last forty years. Some of these are in reality natural products, such as guano, nitrate of soda, and kainite, and are misnamed when called artificial; the phosphates of lime and the ammonia sulphates are manufactured products, and are correctly named when called artificial. Limes, chalks and marls, which have been in use for ages, are correctly called natural. Farm manures are classed alone. Green manures have been in use in various parts of Europe from very early times. A crop is grown on the soil which is not taken off, but ploughed in. In Northern Germany farmers plough in spurrey or lupin to obtain a good crop of rye from a light sandy soil. In America clover and Indian corn are used for this purpose. The plants best suited for green manuring are those which in a given time will produce the greatest amount of valuable available plant-food with least labour and cost. In England spurrey mustard and turnips are used. Green manuring adds no new mineral matter to the soil, it simply brings to the surface from greater or less depth material already existing, and spreads it out to meet the requirements of the succeeding crop. In addition to this, the crop used as a green manure extracts from the air valuable organic substances which are given up to the soil when the decomposition of the ploughed-in crop sets in. In green manuring there is an accumulating of mineral food, and a clear gain in organic matters.

Manures have not exhausted their usefulness when they have supplied, directly, plant-food. They exercise important chemical and physical influences on the soil, some of which have been already noticed, and although, as yet, they are but imperfectly understood, the value of their action is becoming day by day more clearly realised. Farm manure and green manures, which consist largely of decaying vegetation, are, during the process of decomposition, giving off large quantities of carbon-dioxide and other gases which act on the minerals contained in the soil, at a depth, and in positions where the carbon-dioxide of the air does not find a ready entrance. In this way they materially aid the disintegration of the particles of the soil and the liberation of soluble plant-foods. They effect the physical properties of soils. Heavy clays are rendered lighter and easier to work; each straw is an underground drain conveying moisture and air where they would not otherwise easily find their way.

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^{House of Representatives}
 Resolution of the Govt of India on the
 House, Res. 1 of 1912 (Agriculture and
 Horticulture) 1912/12/12. 1912/12/12. 1912/12/12.
 The Government of India have decided to
 establish a series of experimental farms in the
 several provinces of India, for the purpose
 of conducting such experiments as may be
 necessary, and of recording the results of the same
 in other parts of India by officers in
 charge of public gardens, forest gardens
 or horticultural gardens, directing
 that a careful record of such experiments
 should be kept & an account of them
 including a table of statistics in the form
 which they forward should form a part
 of the annual reports furnished by such
 officers & that copies of these reports add
 be forwarded by Local Govts & Administrators
 to the Govt of India, observing that the most useful
 experiments would be those which have
 for their object the improvement of products
 already adopted by cultivators or the in-
 troduction of new varieties of the
 common products of the country, and
 pointing out how they should be conducted.

Recd.
 Copies of the Resolution of the Govt of India
 of 12th Dec 1912 should be forwarded for
 the information & guidance of the Commissioner
 in Dist, the Commr. District Division, the Dist
 of Districts & Presidents of Municipal Committee, the
 District Councils of Districts, the District
 Council of Bombay, the Superintendents of
 the experimental farms at Bhaydarwade & at
 the other the District & Local Govts. This

W. H. L.
 12/12/12

W. H. L.
 12.2.13

W. H. L. in his name

W. H. L.

No. 1205.

*EXTRACT from the Proceedings of the Government of Bombay in the
Revenue Department, dated 6th March 1880.*

Read the following Resolution of the Government of India and its accompaniments:—

No. 2—6271.

Extract from the Proceedings of the Government of India in the Home, Revenue and Agricultural Department (Agriculture and Horticulture),—under date Fort William, the 12th February 1880.

Read:—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half-year ending the 31st December 1878, regarding certain experiments made with cattle manure in the cultivation of Queensland sugar.

Read also:—

An article in the *Indian Agriculturist* of the 1st September 1878, on the subject of manures and their classification.

OBSERVATIONS.

THE Governor General in Council is of opinion that experiments, similar to those made on the Bangalore Farm, might usefully be undertaken in other parts of India by officers in charge of public gardens, jail gardens or Government or Municipal farms. A careful record of such experiments should be kept, and an account of them, including a table of statistics in the accompanying form, should form a part of the annual reports furnished by such officers. Copies of these reports should be forwarded by Local Governments and Administrations to this Department.

2. The most useful experiments would be those which have for their object the improvement of processes already adopted by cultivators, or the utilization as nutritive manures of the common products of the country. They should be conducted on a uniform system, and should consist (1) in cultivating equal areas of manured and unmanured soil of the same kind, under the same conditions, with the same crop; (2) in cultivating different crops in equal areas of manured and unmanured soil of the same kind, under the same conditions; (3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions as of the presence or absence of irrigation.

Ordered that a copy of this Resolution be sent to the following:

* Madras, Bombay, Bencoolen, North Western Provinces, Punjab, Central Provinces, British Burma, Assam, Andamans, Ceylon, Madras, Mysore, and Coorg, Rangoon, at Hyderabad. Administrations.

No. 1205.

*EXTRACT from the Proceedings of the Government of Bombay in the
Revenue Department, dated 5th March, 1886.*

Read the following Resolution of the Government of India and its acco

No. 2--62-71.

Extract from the Proceedings of the Government of India in the Home, Revenue and Agricultural Department (Agriculture and Horticulture),—under date Fort William, the 12th February 1886.

READ—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half-year ending the 31st December 1878, regarding certain experiments made with cattle manure in the cultivation of Queensland maize

Read also—

An article in the *Indian Agriculturist* of the 1st September 1876, on the subject of manures and their classification

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(3) in varying the soil, other things being equal; (4) in varying the kind or amount of the manure, other things being equal; (5) in varying the conditions of the presence or absence of irrigation.

ORDER.—Ordered that a copy of the Resolution be sent to the following Officers:—
Major, Bombay; Major, North Western Provinces; Major, Punjab; Major, Central Provinces; Major, British Burma; Major, Assam; Major, and Major, Resident at Hyderabad. Administrators, &c.

No. 1205.

*EXTRACT from the Proceedings of the Government of Bombay in the
Revenue Department, dated 6th March, 1880.*

Read the following Resolution of the Government of India and its accompaniments :

No. 2—62-71.

Extract from the Proceedings of the Government of India in the Home, Revenue and Agricultural Department (Agriculture and Horticulture),—under date Fort William, the 12th February 1880.

READ—

A report by the Superintendent of the Experimental Farm at Bangalore, for the half-year ending the 31st December 1878, regarding certain experiments made with cattle manures in the cultivation of Queensland maize

Read also—

An article in the *Indian Agriculturist* of the 1st September 1879, on the subject of manures and their classification

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ORDER. Ordered that a copy of this Resolution and of the papers thereon be transmitted to the Local Governments and Administrations in the several Provinces, Bombay, Bengal, North Western Provinces, Punjab, Central Provinces, British Burma, Assam, Madras, and Coorg, Resident at Hyderabad.

14035A

12/5/80

Resolution of the Govt of India in the
Home, Revd Agri: Dept (Agriculture and
Horticulture) No 6271/2/12. 12/5/80
that they were of enormous value to the
agricultural community in the
country, and that similar experiments should be
conducted in other parts of India by officers in
charge of public gardens, jail gardens
or Govt or Municipal farms, directing
that a careful record of such experiments
should be kept & an account of them
including a table of statistics in the form
which they forward should form a part
of the annual reports furnished by such
officers & that copies of these reports should
be forwarded by local Govts & Administrations
to that Dept, observing that the most useful
experiments would be those which have
for their object the improvement of processes
already adopted by cultivators or the
utilization as nutritive manures of the
common products of the country, and
pointing out how they should be conducted

Recd

Copies of the Resolution of the Govt of India
with accompanying documents should be forwarded for
the information & guidance of the Commissioner
in kind, the Commr. N. C. & Divisions, the
Districts or Presidents of Municipal Committee, the
Inspector General of Prisons, the Municipal
Commr. of Bombay, the superintendents of
the experimental farms at Bhadgaon & Jabalpur
& the superintendents of botanical gardens, Ganesh Khind.

File
12/2/80

Urgent
19.2.80

Non-Res. in the

12/2/80

Recd

No. 1205. ,

EXTRACT from the Proceedings of the Government of Bombay in the Revenue Department, dated 6th March 1880.

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No. 2-62-71.

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READ - "

A report by the Superintendent of the Experimental Farm at Bangalore, for the half-year ending the 31st December 1878, regarding certain experiments made with cattle manure in the cultivation of Queensland maize

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* Mr. J. B. Jones, Acting Western Liaison Officer, Embassy, said that new English words would appear in Chinese Resolutions.

*Report on an experiment of the value of cattle manure during half-year ending
31st December 1878.*

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the "brelly," or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass without any grain, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light-sandy loam. The seed was sown in rows two feet apart on the 18th April, and harvested for the sale of the green cobs 18th of August.

The rain-fall during the period of growth was 8.55 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre:—

Number of Plot	Manure per acre	Green cobs	Percentage of increase over unmanured plot	Fodder	Percentage of increase over unmanured plot
		lbs		lbs	
Plot No. 1	Cattle-box manure 5½ tons	5,570	+71	9,710	+71
" No. II.	Dry cow-dung 5½ tons	4,450	+33	7,150	+26
" No. III.	Ashes from 5½ tons cow dung	4,620	+37	4,480	—
" No. IV.	Blank	3,260		3,650	

The small quantity of manure employed, the minimum of water used, and the comparatively poor soil to which they were applied, fully account for the high yield, but the comparative result is very clear.

The yield of the cattle-box manure, both in cobs and fodder of 74 per cent and 71 per cent., respectively, over the unmanured plot, is remarkably high, the manure being well rotted and taken from the lowest part of the pit where it was thoroughly saturated with urine.

The slight increase of four per cent. given by the ashes over cattle-dung manure is due to the forcing action of the former, the whole of the constituents being released from the organic combinations they were held as assimilable vegetable matter. But as the dung of an animal has been proved by careful experiments in Europe to contain only about one-fourth of the plant-food yielded in both dung and urine, it is not surprising to find the result of its action far less energetic than when both are combined, as in the case of the cattle-box manure. The actual decrease of fodder, when ashes were employed, is curious. The plant probably suffered under the too stimulating action of ashes from insufficient moisture, though the amount given, when aided by the organic matter combined both in the dried cow-dung and the cattle-box manure, was adequate. The frequent waterings asserted as necessary for maize by Native gardeners round Bangalore are probably largely due to their partiality for ashes as a manure, for on this farm where cattle-box manure is chiefly employed, and where a deeper cultivation is given, crops are raised with a considerably smaller amount.

F. E. HARMAN, M.A.C., F.C.S.

Superintendent, Experimental Farm, Bangalore.

MANURES AND THEIR CLASSIFICATION.

THERE are three methods adopted to maintain and improve the fertility of soils

- 1st.—Fallowing.
- 2nd.—Rotation of crops
- 3rd.—Manuring

The soil contains an inexhaustible supply of mineral food, not of course all available at once, but only so much of it as the natural processes of disintegration, mechanical and chemical, are constantly liberating. It may, we think, be as safely accepted that the air, water, and the soil contain an equally inexhaustible store of organic food.

It has been held that ammonia (nitrogen) exists in nature in such quantities that, with farmyard manure, it is quite unnecessary to supply it (nitrogen) in artificial manures.

The following experiment, conducted by Mr. Lawes, extending over eighteen years, we think may be held as conclusive in the matter.

Two plots of land, side by side, for eighteen years were manured alternately with ammonia salts and phosphate of lime. In 1852 plot No. 1 was treated with ammonia, plot No. 2 received superphosphate. In 1853 No. 1 got superphosphate, and No. 2 ammonia, and so on for eighteen years. Thus, each plot had been nine times manured with ammonia and nine times with mineral phosphates. Over the whole time the average produce of both was exactly the same, 24½ bushels; but the average of the eighteen crops grown by mineral manure alone, whether on plots No. 1 or No. 2 was only 17½ bushels, whilst the average of the 18 crops grown on either plot by ammonia salts was 21½ bushels, being an increase of nearly 4 bushels per acre more each year. These results, confirmed by Voelcker, and tested by the practice of agriculturists in general way, may be safely accepted as conclusive.

*Report on an experiment of the value of cattle manure during half-year ending
31st December 1878.*

The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the “brelly,” or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass without any gram, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 18th April, and harvested for the sale of the green cobs 18th of August.

The rain-fall during the period of growth was 3·85 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre:—

Number of plot.	Manure per acre.	Green cobs.	Percentage of increase over unmanured plot.	Fodder.	Percentage of increase over unmanured plot.
		lbs.		lbs.	
Plot No. I.	Cattle-box manure 5½ tons ...	5,670	+74	9,710	+71
„ No. II.	Dry cow-dung 5½ tons	4,420	+33	7,150	+26
„ No. III.	Ashes from 5½ tons cow-dung	4,620	+37	4,480	—20
„ No. IV.	Blank	3,860		3,650	...

The small quantity of manure employed, the minimum of water used, and the comparatively poor soil to which they were applied, fully account for the high yield, but the comparative result is very clear.

The yield of the cattle-box manure, both in cobs and fodder of 74 per cent. and 71 per cent., respectively, over the unmanured plot, is remarkably high, the manure being well rotted and taken from the lowest part of the pit where it was thoroughly saturated with urine.

The slight increase of four per cent. given by the ashes over cattle dung manure is due to the forcing action of the former, the whole of the constituent-being released from the organic combinations they were held as inassimilable vegetable matter. But as the dung of an animal has been proved by careful experiments in Europe to contain only about one-fourth of the plant-food voided in both dung and urine, it is not surprising to find the result of its action far less energetic than when both are combined, as in the case of the cattle-box manure. The actual decrease of fodder, when ashes were employed, is curious. The plant probably suffered under the too stimulating action of ashes from insufficient moisture, though the amount given, when aided by the organic matter combined both in the dried cow-dung and the cattle-box manure, was adequate. The frequent waterings asserted as necessary for maize by Native gardeners round Bangalore are probably largely due to their partiality for ashes as a manure, for on this farm where cattle-box manure is chiefly employed, and where a deeper cultivation is given, crops are raised with a considerably smaller amount.

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The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 18th April, and harvested for the sale of the green cobs 18th of August.

The rain-fall during the period of growth was 3.65 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre.—

Number of plot.	Manure per acre	Green cobs	Percentage of increase over unmanured plot	Fodder	Percentage of increase over unmanured plot
		lbs		lbs	
Plot No. I.	Cattle-box manure $5\frac{1}{2}$ tons ...	5,870	+ 74	9,710	+ 71
„ No. II.	Dry cow-dung $5\frac{1}{2}$ tons	4,480	+ 33	7,150	+ 20
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The following experiment has been made for the purpose of bringing forward the difference in value of manure under the system of cattle-box manufacture adopted on this farm and of the two common methods of treatment by the ryots in this Province.

The cattle-box system of housing cattle is briefly as follows: Over a pit sunk about two and a half feet in the ground, a shed is erected with eaves overhanging in such a manner that neither the sun's rays can penetrate (except at an oblique angle in the morning and evening) to dry up the manure nor the rain fall on or run into the pit to unduly wet the contents and render it too moist for the cattle to rest on. The cattle are housed in this shed at night, each in separate compartment, and were supplied, in the case of the present experiment, with grass only. In the morning a little litter, stalks of plants, leaves or unconsumed food, is strewn over the box, especially where the dung has been dropped, and nothing is removed until the pit is full, when the bulk of the manure is carted away to the field. The top layers not decomposed are replaced in the bottom of the empty pit as litter. In this way twenty loads of manure per annum, containing the whole of the dung and urine dropped while the animal is not at work, are secured; and bulk is obtained by utilizing any waste substance for litter, thus adding a large amount of organic matter, which, placed in the soil, acts as a powerful retainer of moisture.

The cow-dung employed in plot No. II. was obtained from a grazing-ground and placed in a heap for some months until required—the common Native method of storing manure not required for fuel. The ashes were the result of burning an equal weight of the same cow-dung representing the residuum from the "brelly," or cow-dung cake, used for fuel throughout India.

The experiment was to test the comparative value of equal weights of each manure. Had the experiment taken the form of using the total amount of manure obtained from a bullock in the same time, the result would have been more striking.

It may be remarked that dung was from mature cattle, fed only on grass without any gram, oil-cake, or other food to enrich the manure.

The crop on which the experiment was tried was Queensland maize, grown on a poor light sandy loam. The seed was sown in rows two feet apart on the 18th April, and harvested for the sale of the green cobs 18th of August.

The rain-fall during the period of growth was 3.85 inches, but this was supplemented with occasional irrigation from a well as required.

The following are the results per acre:—

Number of plot.	Manure per acre	Green cobs	Percentage of increase over unmanured plot.	Fodder	Percentage of increase over unmanured plot.
		lbs.		lbs.	
Plot No. I.	Cattle-box manure $5\frac{1}{2}$ tons ...	5,870	+ 74	9,710	+ 71
„ No. II.	Dry cow-dung $5\frac{1}{2}$ tons	4,480	+ 38	7,150	+ 26
„ No. III. ..	Ashes from $5\frac{1}{2}$ tons cow-dung	4,620	+ 37	4,480	—
„ No. IV.	Blank	3,360		5,650	

The small quantity of manure employed, the minimum of water used, and the comparatively poor soil to which they were applied, fully account for the light yield, but the comparative result is very clear.

The yield of the cattle-box manure, both in cobs and fodder of 74 per cent. and 71 per cent., respectively, over the unmanured plot, is remarkably high, the manure being well rotted and taken from the lowest part of the pit where it was thoroughly saturated with urine.

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Manures may be classified in several ways, according to the view-point of the classifier. They may be classified in the three following ways, with sufficient exactitude to answer most purposes: 1st, as to their origin; 2nd, as to their composition; 3rd, as to their uses.

First, as to their *origin*; they may be regarded as either 1st, natural, or 2nd, artificial. This division makes a clear distinction between all substances used as manures which are produced without man's intervention, and those which are the product of the ingenuity of man. Under the former, natural manures, such widely different substances as farm manures, guano, nitrate of soda, lime, and natural products such as these, are classed together, although in another view, guano, nitrates, lime, &c., though natural products, are nevertheless artificial manures. More correctly speaking, however, the term artificial might be used to indicate those substances manipulated by the art of man to serve his purposes, and they would embrace every manufactured substance introduced as a fertilizer, such as dissolved bones, and mineral and bone superphosphates of all kinds, as well as those compounds prepared by manufacturers to meet the wants of particular crops—tea, indigo, coffee, grass, potato, turnips, &c., and sold under various names. Manures might also be classified either as to their origin or composition, as—1st, animal; 2nd, vegetable; or 3rd, mineral. A classification of this kind, however, is of so vague and general a character as to render it of little practical use.

Second. Manures may be classified as to their composition, as either—1st, general; or 2nd, special. A general manure is one which will supply to the soil, and consequently to the crops grown on the soil, sufficient plant-food of all kinds, to keep up the continual fertility of the land. Beef, mutton, wool, wheat, indigo, tobacco, tea, coffee, &c., cannot be taken year by year from the soil; cannot be sold off the land, and leave it in the same position it was before this process began. The speed with which crops and products of various kinds are prepared for the market is much in advance of the slow natural agencies which are continually acting on the dormant constituents of the soil, and changing them into soluble plant-food. A general manure prevents, or at least retards, the consumption of the plant-food in the soil, and makes it possible to go on producing crop after crop, with as much speed as the natural laws which govern its production will admit of. If added in sufficient abundance, it may enrich an otherwise barren or profitless soil, and so enable it to bear a crop that will more than pay the cost of production. General manures, then, must always be the most important, and no others would be used were it possible to obtain manures with the exact composition of the crops to be raised; this, however, cannot be accomplished, and so it comes to pass that there are always accumulating in the soil vast stores of plant-food, put in year by year in general manures and not removed by successive crops; hence the use of some special manure which, while containing only one important food, deficient in the soil, will enable the crop to take up the abundance of the others which the soil has accumulated or the general manure supplied. Farm manure stands at the head of all general manures. It thoroughly restores to a soil the power of reproducing the same crops. If supplied in sufficient quantities, it completely arrests exhaustion, and restores fertility. It consists of the straw used for litter, and the solid and fluid excre-

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Manures may be classified in several ways, according to the view-point of the classifier. They may be classified in the three following ways, with sufficient exactitude to answer most purposes: 1st, as to their origin; 2nd, as to their composition; 3rd, as to their uses.

First, as to their origin; they may be regarded as either 1st, natural; or 2nd, artificial. This division makes a clear distinction between all substances used as manures which are produced without man's intervention, and those which are the product of the ingenuity of man. Under the former, natural manures, such widely different substances as farm manures, guano, nitrate of soda, lime, and natural products such as these, are classed together, although in another view, guano, nitrates, lime, &c., though natural products, are nevertheless artificial manures. More correctly speaking, however, the term artificial might be used to indicate those substances manipulated by the art of man to serve his purposes; and they would embrace every manufactured substance introduced as a fertilizer, such as dissolved bones, and mineral and bone superphosphates of all kinds, as well as those compounds prepared by manufacturers to meet the wants of particular crops—tea, indigo, coffee, grass, potato, turnips, &c., and sold under various names. Manures might also be classified either as to their origin or composition, as—1st, animal; 2nd, vegetable; or 3rd, mineral: a classification of this kind, however, is of so vague and general a character as to render it of little practical use.

Second. Manures may be classified as to their composition, as either—1st, general; or 2nd, special. A general manure is one which will supply to the soil, and consequently to the crops grown on the soil, sufficient plant-food of all kinds, to keep up the continual fertility of the land. Beef, mutton, wool, wheat, indigo, tobacco, tea, coffee, &c., cannot be taken year by year from the soil, cannot be sold off the land, and leave it in the same position it was before this process began. The speed with which crops and products of various kinds are prepared for the market is much in advance of the slow natural agencies which are continually acting on the dormant constituents of the soil, and changing them into soluble plant-food. A general manure prevents, or at least retards, the consumption of the plant-food in the soil, and makes it possible to go on producing crop after crop, with as much speed as the natural laws which govern its production will admit of. If added in sufficient abundance, it may enrich an otherwise barren or profitless soil, and so enable it to bear a crop that will more than pay the cost of production. General manures, then, must always be the most important, and no others would be used were it possible to obtain manures with the exact composition of the crops to be raised; this, however, cannot be accomplished, and so it comes to pass that there are always accumulating in the soil vast stores of plant-food, put in year by year in general manures and not removed by successive crops; hence the use of some special manure which, while containing only one important food, deficient in the soil, will enable the crop to take up the abundance of the others which the soil has accumulated or the general manure supplied. Farm manure stands at the head of all general manures. It thoroughly restores to a soil the power of reproducing the same crops. If supplied in sufficient quantities, it completely arrests exhaustion, and restores fertility. It consists of the straw used for litter, and the solid and fluid excre-

ments of the animals bred and used on the farm. The excrements are the waste products of digestion, absorption, and assimilation; and, if the food of stock be rich in mineral matter, the bulk of the mineral constituents will re-appear in the excrements. Only a small fraction of the mineral substances contained in the food of men and animals is retained in their bodies after they have attained their full growth. When their bodies have been built up to their full size, the mineral substances contained in the excrements are almost identical with those contained in the food. If swine are fed on potatoes, their dung contains the mineral constituents of potatoes. The dung of horses contains the mineral matter of the hay, oats, &c., on which they are fed; and it is the same with cattle. The manorial value of their dung will vary with their food, and with the stage at which they have arrived in their progress to maturity, the dung of lean and young animals being least valuable, because they retain in their systems the substances necessary to build them up. When the building process is completed, all that is wanted in food is to repair the waste tissues of their bodies. Farm manure is valuable, not only for its mineral constituents, but also for the large quantities of organic matter, nitrogen chiefly, thrown off by animals in the action of their vital functions. It has been calculated that 20 tons of farm manure contain $2\frac{1}{2}$ cwt. of nitrogen, and if a four-years' rotation is assumed, this quantity is probably amply sufficient to supply the whole course. In addition to this, it should not be forgotten that there are vast quantities of ammonia, N. H. 3 and nitric acid absorbed by the soil and carried down into it by rain and dews; with the application of farm manure, then, there may fairly be supposed to be a gradual increase of valuable plant-food to the soil, and all other things being equal, a continual improvement of its productive powers.

2nd.—*Special manures* are those which contain chiefly one plant-food, though others may be present. They are only fitted to supply plant-food of a special kind, such as potash, nitrogen or phosphorus. It must not, however, be supposed that they do nothing more; in every special manure there are always other ingredients, which, while they add nothing, or very little, to their market value, are of great use to the soil in helping to bring about its disintegration, and which play important parts in the decomposition and formation of compounds in the soil. It should, however, be borne in mind that they are valuable chiefly, if not solely, from a commercial point of view, for their potash, nitrogen or phosphorus, and that they should be supplied to soils where there is good reason to believe that these substances are deficient, or where their application would bring into usefulness other plant-foods in which the land abounds.

Farm manure may be used year after year in a perfectly mechanical fashion, and as a matter of course; but special manures demand thought and skill in watching results and arriving at conclusions. The agriculturist who observes and experiments with intelligence on the effects of special manures is in a fair way of making the most out of his land in the shortest time, and with the greatest profit. It is in the use of special manures, however nitrates, kainites and phosphates, especially the two former that most unfortunate mistakes have been made by well-meaning men attempting to follow the practice, the successful practice, of some one who has made them his study, and so acquainted himself with all the conditions of success in their application. These conditions are so many and varied, and have reference to the character of soils, seasons and indigenous vegetation, which sometimes vary over comparatively small areas that the indiscriminate application of special manures has frequently been followed by disappointment and loss sufficiently heavy to raise up a feeling of antipathy to what is called high farming and scientific farming—a feeling which the conservative tendencies alone of such a profession as that of agriculture were sufficient to rouse without any additional element of distrust being brought into play by the failure of imperfectly performed practical experiments. No place is more so in England or elsewhere over the continent, over the island of Hawaii, where the theory of the circulation of the blood, a long gone one, but which has been the basis of their elders' lived and died in, and in the end, the most successful, the most successful with most great truths, they have been able to bring to the attention of the world. In this respect, the

The following are the chief special manures in the market. It should be borne in mind that *special* is here used in opposition to *general*, and that the designation *artificial* is much more commonly applied to them:

ARTIFICIAL OR SPECIAL MANURES.

Ammoniacal or Nitrogenous Manures.

Fernian guano.	Manure cakes (rags).
Obiendorf guano.	Wool manure (shoddy).
Ammonia-fixed guano.	Grease cakes (refuse).
Ichaboe guano.	Dried blood.
Nitrate of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POTASH MANURES.

Kalinite or crude potash.	Muriate of potash.
Calcined kañilite.	Sulphate of potash.

PHOSPHATIC MANURES.

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apatite.	Phosphatic gas.

There remains to be shortly noticed the classification of manures as to their uses. With regard to the effect produced on the soil and crop, manures may be classified as—1st, stimulating; 2nd, nutritive; and 3rd, corrective. All ammoniacal manures may be classed as stimulating (see table above); in its general action on the soil, lime may also fall under this head. Nutritive manures are those whose special function it is to supply a variety of plant-food, so that farm manures, general manures, would be classed under this head. There is, of course, no manure which does not supply plant-food, of some kind, in more or less abundance; but the term nutritive could not be applied with correctness to the artificial or special manures enumerated above, whose special functions are by supplying one kind of plant-food to enable the crop to take up large quantities of others stored in the soil. Stimulating manures, instead of retarding or preventing the exhaustion of the soil, quicken it, by enabling the crop to take up greater quantities of plant-food in a shorter period than without their use could be effected.

3rd.—*Corrective* manures are those whose application to land acts beneficially on some injurious substance, such as an acid, present in undue quantities in the humus, and it may be by liberating the double silicates already referred to in a former article, thus provide abundant food for a higher and more nutritious class of indigenous plants, which ultimately drive out less desirable ones. The judicious and combined application of salt and lime to properly-drained marsh and low-lying pasture lands is something marvellous and requires to be seen before it can be realized in its entirety.

The uses of lime and salt as corrective manures are of the very highest value; and the application of artificial manures of the costliest kind would probably be utterly useless, a waste of money and labour, until a change had been effected on the indigenous vegetation of the land. In salt the agriculturist possesses a substance by means of which he can regulate, to a great extent, the growth of the stem in all cereals.

Manures manufactured and sold to suit the requirements of special crops are probably increasing in demand. There are, however, so many conditions necessary to success in producing an article of this kind, that there need be no wonder if they sometimes do not come up to the expectations of the purchaser.

Agriculturists themselves are probably the best parties to observe and experiment on the value of manures prepared to meet the requirements of special crops. It is only just to manufacturers to say that excellence in the preparation of special manures has been arrived at by very careful researches, and by the

mingling together of fertilizing matter in those proportions and combinations which experience has proved likely to produce beneficial effects. It is not the interest of the manufacturer to supply worthless stuff. It is his interest to prepare the purest, cheapest, and best special manure that a careful watching of the markets, and a wide experience of the requirements of a special crop, can command. The conditions of success are, however, as we have said, so numerous and varied, that we may hopefully look for a greater development of this class of manure based on a wider and longer experience.

SPECIAL MANURES

(1)—For wheat, barley or rye— 2½ cwt mineral superphosphate 2 " sulphate of ammonia (2)—Potato manure— 4 cwt. mineral sup. erphosphate. 2 " potash salts. 2 " sulphate of ammonia or nitrate of soda. (3)—For grass lands deficient in potash.— 2 cwt. mineral superphosphate, 1 " sulphate of ammonia, 2 " calcined kainite.	(4)—Manure for tea, coffee and indigo— 20 per cent of soluble alkalis, chloride of potassium and sodium, and sulphate of potash. 20 " " lime and magnesia. 7 " " Phosphoric acid, equal to 15 per cent of phosphate of lime. The remainder being sulphuric acid, iron, carbon di oxide, organic nitrogenous matter and silica
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The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

In the classification in common use, the term artificial is confined to that class of manures which have come into use during the last forty years. Some of these are in reality natural products, such as guano, nitrate of soda, and kainit, and are misnamed when called artificial, the phosphates of lime and the ammonia sulphates are manufactured products, and are correctly named when called artificial. Limes, chalks and marls, which have been in use for ages, are correctly called natural. Farm manures are classed alone. Green manures have been in use in various parts of Europe from very early times. A crop is grown on the soil which is not taken off, but ploughed in. In Northern Germany farmers plough in spurrey or lupin to obtain a good crop of rye from a light sandy soil. In America clover and Indian corn are used for this purpose. The plants have suited for green manuring are those which in a given time will produce the greatest amount of valuable available plant-food with least labour and cost. In England spurrey mustard and turnips are used. Green manuring adds no new mineral matter to the soil, it simply brings to the surface from greater or less depth material already existing, and spreads it out to meet the requirements of the succeeding crop. In addition to this, the crop used as a green manure extracts from the air valuable organic substances which are given up to the soil when the decomposition of the ploughed-in crop sets in. In green manuring there is an accumulation of mineral food and a clear gain in organic matters.

Manures have not exhausted their usefulness when they have supplied directly plant-food. They exercise important chemical and physical influences on the soil some of which have been already noticed, and although, as yet, they are but imperfectly understood, the value of their action is becoming day by day more clearly realized. Farm manure and green manures which consist largely of decaying vegetation, are, during the process of decomposition, giving off large quantities of carbon-dioxide and other gases which act on the minerals contained in the soil at a depth and in positions where the carbon-dioxide of the air does not find a ready entrance. In this way they materially aid the descent of the gaseous bodies of the soil and the liberation of soluble plant-food. If the physical properties of soils be taken into consideration, the value of manures is not otherwise easily found. Heavy clays are rendered looser and easier to work, such as loess is an underground drainage, and in the soil which is not otherwise easily found their way.

The following are the chief special manures in the market. It should be borne in mind that special is here used in opposition to general, and that the designation artificial is much more commonly applied to them:

ARTIFICIAL OR SPECIAL MANURES.

Ammoniacal or Nitrogenous Manures.

Peruvian guano.	Manure cakes (raps).
Oblanderf guano.	Wool manure (shoddy).
Ammonia-fixed guano.	Grease cakes (rolase).
Ichaboe guano.	Dried blood.
Nitrate of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POTASH MANURES.

Kainite or crude potash.	Muriate of potash.
Calcined kainite.	Sulphate of potash.

PHOSPHATIC MANURES.

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apatite.	Phosphatic guano.

There remains to be shortly noticed the classification of manures as to their uses. With regard to the effect produced on the soil and crop, manures may be classified as—1st, stimulating; 2nd, nutritive; and 3rd, corrective. All ammoniacal manures may be classed as stimulating (see table above); and in its general action on the soil, lime may also fall under this head. Nutritive manures are those whose special function it is to supply a variety of plant-food, so that farm manures, general manures, would be classed under this head. There is, of course no manure which does not supply plant-food, of some kind, in more or less abundance; but the term nutritive could not be applied with correctness to the artificial or special manures enumerated above, whose special functions are by supplying one kind of plant-food to enable the crop to take up large quantities of others stored in the soil. Stimulating manures, instead of retarding or preventing the exhaustion of the soil, quicken it, by enabling the crop to take up greater quantities of plant-food in a shorter period than without their use could be effected.

3rd.—*Corrective* manures are those whose application to land acts beneficially on some injurious substance, such as an acid, present in undue quantities in the humus, and it may be by liberating the double silicates already referred to in a former article, thus provide abundant food for a higher and more nutritious class of indigenous plants, which ultimately drive out less desirable ones. The judicious and combined application of salt and lime to properly-drained marsh and low-lying pasture lands is something marvellous and requires to be seen before it can be realized in its entirety.

The uses of lime and salt as corrective manures are of the very highest value and the application of artificial manures of the costliest kind would probably be utterly useless, a waste of money and labour, until a change had been effected on the indigenous vegetation of the land. In salt the agriculturist possesses a substance by means of which he can regulate, to a great extent, the growth of the stem in all cereals.

Manures manufactured and sold to suit the requirements of special crops are probably increasing in demand. There are, however, so many conditions necessary to success in producing an article of this kind, that there need be no wonder if they sometimes do not come up to the expectations of the purchaser.

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SPECIAL MANURES.

(1)—For wheat, barley or rye— 2½ cwt. mineral superphosphate. 2 " sulphate of ammonia. (2)—Potato manure— 4 cwt. mineral superphosphate. 2 " potash salts. 2 " sulphate of ammonia or nitrate of soda. (3)—For grass lands deficient in potash— 2 cwt. mineral superphosphate. 1 " sulphate of ammonia. 2 " calcined kainite.	(4)—Manure for tea, coffee and indigo— 20 per cent. of soluble alkalies, chloride of potassium and sodium, and sulphate of potash. 20 " " lime and magnesite. 7 " " Phosphoric acid, equal to 15 per cent. of phosphate of lime. The remainder being sulphuric acid, iron peroxide, organic nitrogenous matter and silica.
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The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

In the classification in common use, the term artificial is confined to that class of manures which have come into use during the last forty years. Some of these are in reality natural products, such as guano, nitrate of soda, and kainite, and are misnamed when called artificial; the phosphates of lime and the ammonia sulphates are manufactured products, and are correctly named when called artificial. Limes, chalks and marls, which have been in use for ages, are correctly called natural. Farm manures are classed alone. Green manures have been in use in various parts of Europe from very early times. A crop is grown on the soil which is not taken off, but ploughed in. In Northern Germany farmers plough in spurrey or lupin to obtain a good crop of rye from a light sandy soil. In America clover and Indian corn are used for this purpose. The plants best suited for green manuring are those which in a given time will produce the greatest amount of valuable available plant-food with least labour and cost. In England spurrey mustard and turnips are used. Green manuring adds no new mineral matter to the soil, it simply brings to the surface from greater or less depth material already existing, and spreads it out to meet the requirements of the succeeding crop. In addition to this, the crop used as a green manure extracts from the air valuable organic substances which are given up to the soil when the decomposition of the ploughed-in crop sets in. In green manuring there is an accumulating of mineral food, and a clear gain in organic matters.

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Hilendorf guano.	Wool manure (shoddy).
Atanionia-fixed guano.	Grease cakes (refuse).
Ichaboe guano.	Dried blood.
Nitrate of soda.	Refuse of the bodies of fish and other animals.
Sulphate of ammonia.	

POTASH MANURES.

Kainite or crude potash.	Muriate of potash.
Calcined kainite.	Sulphate of potash.

PHOSPHATIC MANURES.

Dissolved bones.	Mineral superphosphate.
Ground bones.	Bone superphosphate.
Ash of bones.	A mixture of bone and mineral superphosphate.
Apatite.	Phosphatic guano.

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SPECIAL MANURES.

(1)— <i>For wheat, barley or rye</i> — 2½ cwt. mineral superphosphate. 2 „ sulphate of ammonia.	(4)— <i>Manure for tea, coffee and indigo</i> — 30 per cent. of soluble alkalis, chloride of potassium and sodium, and sulphate of potash. 20 „ „ lime and magnesia. 7 „ „ Phosphoric acid, equal to 15 per cent. of phosphate of lime. The remainder being sulphuric acid, iron peroxide, organic nitrogenous matter, and silica.
(2)— <i>Potato manure</i> — 4 cwt. mineral superphosphate. 2 „ potash salts. 2 „ sulphate of ammonia or nitrate of soda.	
(3)— <i>For grass lands deficient in potash</i> — 2 cwt. mineral superphosphate. 1 „ sulphate of ammonia. 2 „ calcined kainite.	

The composition of these special manures is varied according as the requirements of the crop and the nature of the soil are believed to stand in need of particular substances. The quantities given in (1), (2) and (3) are laid on for each acre; No. (4) is applied at the rate of ten cwt. per acre.

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RESOLUTION.—Copies of the Resolution of the Government of India and its accompaniments should be forwarded for the information and guidance of the Commissioner in Sind, the Commissioners, Northern, Central and Southern Divisions, the Collectors of Districts and Presidents of Municipal Committees, the Inspector General of Prisons, the Municipal Commissioner of Bombay, the Superintendents of the Experimental Farms at Bhadgaon and Hyderabad, and the Superintendent, Botanical Gardens, Ganesh Khind.

M. A.

M. A. Acting Secretary to Government.

To

- 2 The Commissioner in Sind.
- 2 The Commissioner N. D.
- 2 The Commissioner C. D.
- 2 The Commissioner S. D.
- The Collectors and Presidents of Municipal Committees (including those in Sind).
- The Superintendents in Sind.
- 2 The Inspector General of Prisons.
- 2 The Municipal Commissioner, Bombay.
- The Superintendent of the Experimental Farm, Bhadgaon.
- 2 The Superintendent of the Experimental Farm, Hyderabad.
- The Superintendent, Botanical Gardens, Ganesh Khind.
- 2 The Judicial Department of the Secretariat.
- 2 The General Department of the Secretariat.

Copy 3

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The Superintendents in Sind

20 The Inspector General of Prisons.

✓ The Municipal Commissioner, Bombay.

✓ The Superintendent of the Experimental Farm, Bhadgaon.

✓ The Superintendent of the Experimental Farm, Hyderabad.

✓ The Superintendent, Botanical Gardens, Ganesh Khind.

✓ The Judicial Department of the Secretariat.

✓ The General Department of the Secretariat

Prop 3

Resolution.—Copies of the Resolution of the Government of India and its accompaniments should be forwarded for the information and guidance of the Commissioner in Sind, the Commissioners, Northern, Central and Southern Divisions, the Collectors of Districts and Presidents of Municipal Committees, the Inspector General of Prisons, the Municipal Commissioner of Bombay, the Superintendents of the Experimental Farms at Bhadgaon and Hyderabad, and the Superintendent, Botanical Gardens, Ganesh Khind.

Mick

The Acting Secretary to Government.

To

- 2-The Commissioner in Sind
- 2-The Commissioner N. D.
- 2-The Commissioner C. D.
- 2-The Commissioner S. D.

No. 114/220
10 to 1000
10 to 1000 The Collectors and Presidents of Municipal Committees (including those in Sind).

The Superintendents in Sind.

- 2-The Inspector General of Prisons.
- / The Municipal Commissioner, Bombay.
- / The Superintendent of the Experimental Farm, Bhadgaon.
- / The Superintendent of the Experimental Farm, Hyderabad.
- / The Superintendent, Botanical Gardens, Ganesh Khind.
- / The Judicial Department of the Secretariat.
- / The General Department of the Secretariat.

114/220

TOTAL EXPOSURES

45

TOTAL EXPOSURES

45

END

START

START

START

DEPARTMENT OF ARCHIVES

GOVERNMENT OF MAHARASHTRA, MUMBAI.

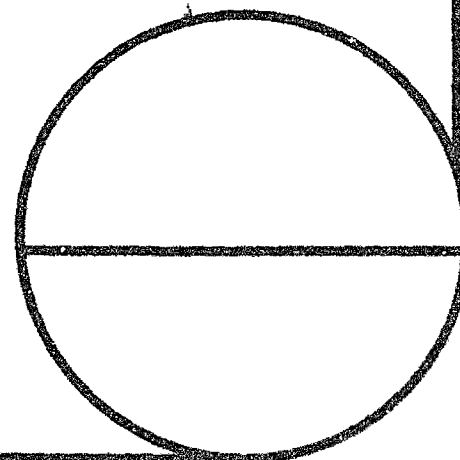
NAME OF RECORD : REVENUE DEPTT. VOL.

NO : 11

YEAR : 1830

EXPOSED BY : ANIL SAWANT

DATE : 06/10/2007



DEPARTMENT OF ARCHIVES

GOVERNMENT OF MAHARASHTRA, MUMBAI.

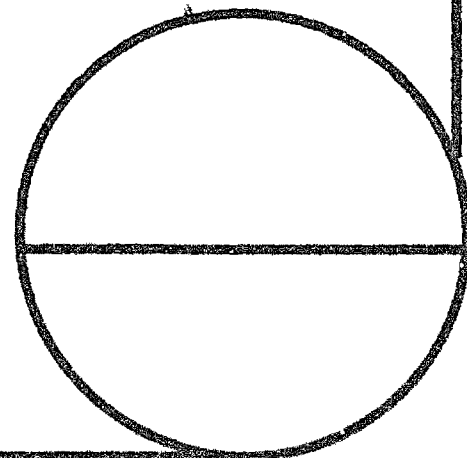
NAME OF RECORD : REVENUE DEPARTMENT VOL.

NO : 11-1250

YEAR : 1880

EXPOSED BY : ANIL SAWANT

DATE : 06/10/2007



250

7880

Rev Dep
N^o 1250

Administration Report
Belgium

1880

250

1880

Rev Dep^t

N^o 1250

Administration Reports

Belgium

250

250

1880

Rev Dept^r

N^o 1250

Administration Refuse

Belgium

250

250

1880

Rev. Dep^t

N^o 1250

Administration Reports

Belgium

250

No. 1664 of 1880

From

Revenue Department
Arthur Crawford Esquire
Commissioner S.D.

To,

John Nugent Esquire
Secretary to Government.

Sir

Poona 29th July 1880

The Belgaon Administration re-
ports, dated as per margin, were
received by
Collector no. 2012 dated 24th
July 1880
First Deputy Collector no. 151 of 27th instant,
14th July 1880
Second Deputy Collector no. 173 late as usual
of 16th July 1880
District Deputy Collector, the reasons
no. 158 of 14th July 1880 assigned being
satisfactory to

the Collector, but not so to myself.
In a separate explanatory letter
appended the Collector states that
the bulk of the material for his
own report was compiled by Mr.
Steel, his Assistant temporarily
in charge during his own ill-
ness and absence from office
on leave from the 10th to the 24th.

No 1664 of 1880

From

Revenue Department

To,

Arthur Crawford Esquire
Commissioner S.D.

John Nugent Esquire
Secretary to Government

Sir

Poona 27th July 1880

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received by
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July 1880
First app^t Collector no: 151 of
14th July 1880
Second app^t Collector no: 173
of 16th July 1880
District Deputy Collector
no 188 of 17th July 1880
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27th Instant,
late as usual,
the reasons
assigned being
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In a separate explanatory letter
appended the Collector states that
the bulk of the material for his
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ness and absence from office
on leave from the 10th to the 24th

No. 1664 of 1880

From Revenue Department
Arthur Crawford Esquire
To, Commissioner S.D.

John Nugent Esquire
Secretary to Government

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the bulk of the material for his
own report was compiled by Mr.
Holt, his 1st Assistant temporarily
in charge during his own ill-
ness and absence from office
on leave from the 5th to the 24th

Instant. From this it is clear that the Collector put off the preparation of his report to the last moment, and of course it is late

2 All the high officials, the Collector, his 1st Assistant and Supernumerary Assistant Collector, have been more than a year in the District and continuously at work during the past year, except that the Collector took a month's leave in November and December. It is reasonable, therefore, to look for a marked improvement in the very defective administration committed on by Government and myself last year. The expectation, however, has, I regret to say, been by no means realised.

3 The rainfall was abundant and seasonable and on the whole. Para 14

the season was decidedly favourable. The fact that placometers have been placed at three new highalt stations (Buker, Chandford and Kurgod) should have been mentioned. ~~The~~ rate per mille of Births and deaths, respectively 21.37 and 37.97, should have been recorded. The mortality fell from 61146 in 1877-78 to 29,609 in 1878-79. There was a little more attention to birth registration, but the Collector is rather vague on the subject.

4 The public health was generally good, and there was no epidemic. The attendance at the different dispensaries should have been separately stated. The water supply of the town of Dipani must take precedence of every other scheme, even if for

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3 The rainfall was abundant and season-
able, and on the whole, Per-
the

the season was decidedly favourable. The fact that pleuro-pneumonia have been placed at three new hospital stations - (Hukeri, Chandyad and Kurgod) should have been mentioned. The rate per mille of Births and deaths, respectively 21.37 and 37.97, should have been recorded. The mortality fell from 61146 in 1877-78 to 29,609 in 1878-79. There was a little more attention ^{paid} to birth registration, but the Collector is rather vague on the subject.

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Instant. From this it is clear that the Collector put off the preparation of his report to the last moment, and of course it is late.

2 All the higher officials, the Collector his 1st Assistant and Supernumerary Assistant Collector, have been more than a year in the District and continuously at work during the past year, except that the Collector took a month's leave in November and December. It is reasonable, therefore, to look for a marked improvement in the very defective administration commended on by Government and myself last year. The expectation, however, has, I regret to say, been by no means realised.

3 The rainfall was abundant and season-
able and on the whole, Para 4
the

the season was decidedly favorable. The fact that pleuro-meters have been placed at three new Mahal Stations - (Bakeri, Chandood and Buirgod) should have been mentioned. ~~The~~ rate per mille of Births and deaths, respectively 21.37 and 37.97, should have been recorded. The mortality fell from 61146 in 1877-78 to 29,609 in 1878-79. There was a little more ^{at} attention ^{paid} to birth registration, but the Collector is rather vague on the subject.

4 The public health was generally good, and there was no epidemic. The attendance at the different dispensaries should have been separately stated. The water supply in the town of Kipani must take precedence of every other service, and for

a dispensary I satisfied myself personally on this point. Vaccination was much better attended to. The outcome of the crops was good, sugar cane being a bumper; there was an inconsiderable increase in the number of carts and a large increase in horned cattle, prices are falling gradually; the demand for rate of labour remained normal; the great fair of Yellamma was unusually crowded; the people are in better spirits, but the reaction from the famine is not so marked as in Dharwar.

5 The Collector has omitted to state what was the yield of the capitation tax at the Yellamma fair; the statement at para 58

of

of the Williamson Municipal
Hills, apparently contains
mention of the capitulation.

Pers. 11.

6 In the neighbour-
ing District, Dharwar, Takar
advanced under the old
rules. were freely
solicited by the people and
much good resulted there by
The Collector of Belgaum,
however only advanced Rs. 1000
under the Land Improvement
Act and alleges that the
violation of the rules for Takar
denies the needy ryots in
preference to the Native
Bankers. Why the same class
of people should easily avail
themselves of and appreciate
the boon in Dharwar is not
intelligible; and I am convinced
apathy and want of real interest
on the part of the local author-
ities at Belgaum is the true

a dispensary. I satisfied myself personally on this point. Vaccination was much better attended to. The outturn of the crops was good, sugar cane being a bumper; there was ~~an~~ inconsiderable ~~de-~~crease in the number of carts and a large increase in horned cattle; prices are falling gradually; the demand for rate of labour remained normal; the great fair of Yellamma was unusually crowded; the people are in better spirits, but the reaction from the famine is not so marked as in Peshwar.

5. The Collector has omitted to state what was the yield of the capitation tax at the Yellamma fair; the statement at para 58
of

of the Yellamur Municipal
Board apparently contains no
mention of the capitation tax

Para 11. 6

In the neighbour-
ing District, Dharwar, Takari
advances under the old
rules were freely
solicited by the people and
much good resulted thereby.
The Collector of Belgaum,
however, only advanced Rs 100
under the Land Improvement
Act, and alleges that the
rigidity of the rules for Takari
denied the needy, rights in
preference to the Native
Bankers. Why the same class
of people should eagerly avail
themselves of and appreciate
the boon in Dharwar is not
intelligible; and I am convinced
that a hearty and warm interest
on the part of the local autho-
rities at Belgaum.

a dispensary. I satisfied myself personally on this point. Vaccination was much better attended to. The outturn of the crops was good, sugar cane being a bumper; there was an inconsiderable increase in the number of carts and a large increase in horned cattle; prices are falling gradually; the demand for rate of labour remained normal; the great fair of Yellamma was unusually crowded; the people are in better spirits, but the reaction from the famine is not so marked as in Phaswar.

5. The Collector has omitted to state what was the yield of the capitation tax at the Yellamma fair; the statement at para 58

of the village Municipal
Funds apparently contains no
mention of the capitation tax

Para 11 6

In the neighbor-
ing District, Dharwad, Takari
advances under the old
rules were freely
solicited by the people and
much good resulted thereby.
The Collector of Belgaum,
however, only advances Rates
under the Land Improvement
Act, and alleges that the
rigidity of the rules for Takari
deprive the needy ryots in
preference to the Native
Bankers. Why the same class
of people should eagerly avail
themselves of and appreciate
the boon in Dharwad is not
intelligible; and I am convinced
that apathy and want of interest
on the part of the local author-
ities of Belgaum is the

a dispensary. I satisfied myself personally on this point. Vaccination was much better attended to. The outturn of the crops was good, sugar cane being a bumper; there was an inconsiderable increase in the number of carts and a large increase in horned cattle, prices are falling gradually; the demand for rate of labour, remained normal; the great fair of Yellamma was unusually crowded; the people are in better spirits, but the reaction from the famine is not so marked as in Dharwar.

5 The Collector has omitted to state what was the yield of the capitation tax at the Yellamma fair; the statement at para 58 of

of the Gilliam's Municipal
Friends apparently contains no
mention of the capitation tax

Para 11 6 In the neighbour-
ing District, Dharwad, Takari
advances under the old
rules were freely
solicited by the people and
much good resulted there by.
The Collector of Belgaum -
however, only advances Rstos
under the Land Improvement
Act, and alleges that the
rigidity of the rules for Takari
drive the needy ryots in
preference to the Native
Bankers. Why the same class
of people should eagerly avail
themselves of and appreciate
the boon in Dharwad is not
intelligible; and I am convinced
that apathy and want of real interest
on the part of the local author-
ities is what is the

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Board, apparently contains no
mention of the capitation tax

Para 11 6 the neighbour-
ing District, Dharwar, Takari
advances under the old
rules were freely
solicited by the people and
much good resulted thereby.
The Collector of Belgavi,
however, only advanced Rs 100
under the Land Improvement
Act, and alleges that the
rigidity of the rule for Takari
denied the needy ryots in
preference to the Native
Bankers Why the same class
of people should eagerly avail
themselves of and appreciate
the boon in Dharwar is not
intelligible; and I am convinced
that a hearty and ardent interest
on the part of the local auto-
rities of Belgavi.

in explanation of the anomaly -

7 There is an error in Column II of the Statement. Para 18 the difference between 88,857 and 1,00,520 is 11,663 not 11,740 as there is shown.

8 I do not understand why the lands of absconded ryots ^{Paras 17, 18 & 19 and Collector's remark on 102. Fleet's 5th para} were not sold before the season was far advanced, because the authorities waited to see if any relations of these ryots would appear... On the whole I must condemn the delay, as the result of sheer neglect. Had the lands been sold at the proper and reasonable time it is probable that most of the balances Rs. 30,000 on account of 1879-80) due in the Paragad Taluka would have been recovered. The Collector beyond alluding to the remissions

late

lately sanctioned by Government has not taken the trouble to report in detail on the outstanding balances as has been done by other collectors.

9. The heading of column of the marginal table should be "£ line not interest and fees for non-payment"

10. The collector should report separately hereafter his proposals regarding the ferry toll at Gul Horsk at present taken by the namdar. It must depend on the cost of making the deviation of the road, and the discussion is, therefore, premature and out of place in this report.

11. No information is given as to the increase in the forest area (see p. 1)

confusion of the morning -

7 There is an error in Column II of the Statement, Para 18. the difference between 88,857 and 100,520 is 11,663, not 11,740 as there shown.

8 I do not understand why the lands of Paras 17, 18 & 19 and absconded ryots ^{Collector's remark on} were not sold before the season ^{was} far advanced, because the authorities waited to see if any relations of these ryots would appear!! On the whole I must condemn the delay as the result of sheer neglect. Had the lands been sold at the proper and reasonable time it is probable that most of the balances (Rs. 3000 on account of 1879-80) due in the Paragad Taluka would have been recovered. The Collector beyond alluding to the remissions

Lately

lately sanctioned by Government,
has not taken the trouble
to report in detail on the out-
standing balances as has
been done by other collectors.

9 The heading of column
2 of the marginal table should
be " $\frac{1}{4}$ line", not "Interest
and fees for non-payment".

10 The collector should
report separately hereafter his
Para 22 proposals regarding
the ferry toll at Gurl Hosur,
at present taken by the
mandar. It must depend
on the cost of making the
deviation of the road, and
the discussion is therefore
immature and out of place in
this report.

11 No information is
given as to the increase in
Par 24 interest in 1901

explanation of the anomaly -

7 There is one error in Column II of the Statement, Para 18. the difference between 88,857 and 100,520 is 11,663 not 11,740 as there shown.

8 I do not understand why the lands of abscinded ryots were not sold before the season was far advanced because the authorities waited to see if any relations of these ryots would appear. On the whole I must condemn the delay as the result of sheer neglect. Had the lands been sold at the proper and seasonable time it is probable that most of the balances (Rs 3000 on account of 1879-80) due in the Paragad Taluka would have been recovered. The collector beyond alluding to the remissions

late.

lately sanctioned by Government,
has not taken the trouble
to report in detail on the out-
-standing balances as has
been done by other collectors.

9 The heading of column
~~1000~~ at the marginal table should
Para 26 be " $\frac{1}{4}$ fine", not interest
and fees for non-payment.

10 The collector should
report separately hereafter his
Para 22 proposals regarding
the ferry toll at Guel Borda
at present taken by the
namdar. It must depend
on the cost of making the
deviation of the road, and
the discussion is, therefore,
premature and out of place in
this report.

11 No information is
given as to the increase in
Para 24 forest area (a.)

the new system of Departmental supply of firewood is stated to have resulted in the satisfactory increase of Rs 18,833 to the revenue.

12 The Stamp revenue on the whole yielded Rs 25,126 a trifle more than in the preceding year. The information regarding the License Tax Act is full; and the balance satisfactorily explained.

13 The Collector has no minor Estates in Para 27 his charge under Act XX of 1804

14 One sixth of the total number of village Pans 78 Accountants (i.e. 148 out of 887) were punished; from which fact I must conclude, though the Collector does not say a word on the subject, that their general conduct has

less permiss. With no special duties
of any kind, but Waddington's
assistants ought to be able
to do much more in the
way of Watan registration.

The annual financial inspection performed by the Collector, W. Gaddington, shows no improvement whatever on that done by himself and Mr. Brown in the previous year, except that he scrutinized 210, instead of 45 cases, tried by the Intermediate Magistracy. I find that in papers 208 days at Alameda, 37 days were taken in total, leaving a little over 10 per cent.

the new system of Departmental supply of firewood is stated to have resulted in the saw factory increase of Rs 18,833 to the revenue.

12. The Stamp revenue on the whole yielded Rs 2,582 a trifle more than in the preceding year. The information regarding the License Tax is full, and the balance satisfactorily explained.

13. The Collector has no rumors states in Para 27 his charge under Act XX of 1864

14. One sixth of the total number of village Para 28 Accountants (i.e. 148 out of 897) were punished, from which fact I must conclude, though the collector does not say a word on the subject, that their general conduct has

business. With no special duties
of any kind, Mr. Waddington's
Assistants ought to be able
to do much more in the
way of Watan. registrations.

15 The amount of
personal inspection performed
Pars 29@47 by the Collector,
Mr. Waddington shows no im-
provement whatever on that
done by himself and Mr. Boren
the previous year, except
that he scrutinized 210 instead
of 48 cases; tried by the
Subordinate Magistrate. I
find that he passed 208 days
at Belgam, 30 ^{more} days were
taken up in leave, leaving
a little over 4 months passed
in tour where in were crowded
the inspection of six mandals.

the new system of Departmental supply of firewood is stated to have resulted in the satisfactory increase of Rs 18833 to the revenue.

12 The Stamp revenue on the whole yielded Rs 25426 a trifle more than in the preceding year. The information regarding the License Tax Act is full, and the balance satisfactorily explained.

13 The Collector has no Immov. Estates in Para 27. his charge under Act XX of 1864

14 One sixth of the total number of village Para 28 Accountants (i.e. 148 out of 897) were punished, from which fact I must conclude, though the collector does not say a word on the subject, that their general conduct has

leave, & mess. With no special duties
of any kind, Mr. Waddington's
Assistants ought to be able
to do much more in the
way of Watau registrations.

15 The amount of
personal inspection performed
by the Collector.

Para 290 & 7

Mr. Waddington, shows no im-
provement whatever on that
done by himself and Mr. Bosanquet
the previous year, except
that he scrutinized 210, instead
of 48, cases, tried by the
Subordinate Magistracy. I
find that he passed 208 days
at Belgium, 30 ^{more} days were
taken up in leave, leaving
a little over 4 months passed
in tour where in were crowded
the inspection of six Hamlets.

and the teahalkasis Stations
and Offices. I can only term
this unsatisfactory

16. I have already re-
ported most unfavourably Para 18
ably both of the Police and of
Police administration in the
Belgaum District.

17. The District Magistrate does not men-
tion how the Police Patels
holding commissions performed
their duties or how the village
Police generally, regulated
themselves.

18. The fact alleged
that large numbers of Para 52
persons still hold arms under
old instead of new licenses,
is not creditable either to
the Magistrate or the Police.

19. I approve generally
of the manner in Para 53.
where it is proposed to spend
some of the large local
fund.

Fund balances, and I shall
steadily discourage the con-
-struction of any but roads
capable of use in the mon-
soon. The amount expended
on the repair of fair weather
tracks is again excessive and
may surely be reduced
with advantage. Until the
line of the new Railways is
finally determined, I do not
desire that the District
Local Funds Committees of
the Southern Marathi Country
should commence new
roads. But the Belgaum
District Local Funds Com-
-mittee ^{may} fairly join the
Kohapur State and the
Provincial Funds in
completing that road

and two Teahalkari Stations and Offices. I can only term this unsatisfactory:

16 I have already reported most unfavourably, both of the Police and of Police administration in the (Belgaum District)

17 The District Magistrate does not mention how the Police Patels holding commissions performed their duties, or how the village Police generally acquitted themselves

18 The fact alleged that large numbers of persons still hold arms under old instead of new licenses, is not creditable, either to the Magistracy or the Police

19 I approve generally of the manner in which it is proposed to spend some of the large local fund

Fund balances, and I shall
 steadily discourage the con-
 -struction of any but roads
 capable of use in the mon-
 -soon. The amount expended
 on the repair of fair weather
 tracks is again excessive and
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 with advantage. Until the
 line of the new Railways is
 finally determined, I do not
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 the Southern Marathi Country
 should commence new
 roads. But the Belgaum
 District Local Funds Com-
 mittee ^{must} fairly join the
 Kolhapur State and the
 Provincial Funds in
 completing that work

and two teahalkaris Stations
and Offices. I can only term
this unsatisfactory.

16 I have already re-
-ported most unfavourably Para 48
-ably, both of the Police and of
Police administration in the
(Belgaum District)

17 The District Magistrate does not men-
-tion how the Police Patels
holding commissions performed
their duties, or how the village
Police generally acquitted
themselves.

18 The fact alleged
that large numbers of Para 57-
persons still hold arms under
old, instead of new, licenses,
is not creditable, either to
the Magistracy or the Police.

19 I approve generally
of the manner in Para 55
which it is proposed to spend
some of the large local

fund

fund balances and I shall
steadily discourage the con-
-struction of any but roads
capable of use in the mon-
-soon. The amount expended
on pair of fair weather
tracks is again excessive and
may surely be reduced
with advantage. Until the
line of the new Railways is
finally determined I do not
desire that the District
Local Funds Committees of
the Southern Mahratti Country
should commence new
roads. But the Belgaum
District Local Funds Com-
-mittee ^{may} fairly join the
Kolhapur State and the
Provincial Funds in
Completing that most

important ~~arterial~~
communication from
the top of the Phonda
Ghat through Nipani
into the heart of the
Belgaum District. I shall
shortly submit the scheme
which ought to have been
carried out many years
ago when the Phonda Ghat
was first constructed.
For years past the
track, for it is little
better, has been barely
passable for carts, and
in many places it
is dangerous.

The Collector has omitted
to add as required
by standing orders, a column
to the statement of Municipal
Funds showing the opening
balance in each Municipality.
I find that after all nothing
has been really done by the
Irrigation Department
towards a survey for the
supply of Belgawan, and up
to this moment the plans
for improving the water
works of Nibani have not
reached me. The town of
Belgawan has never been seen,
and little in the way of
permanent improvement
can in effect be even -

important arterial
communication. from
the top of the Phonda
ghat through Nipani
into the heart of the
Belgaum District. I shall
shortly submit the scheme
which ought to have been
carried out many years
ago when the Phonda ghat
was first constructed.
For years past the
track for it is little
better. Has been barely
passable for carts, and
in many places it
is dangerous.

The

Para. 5.8

20. The collector has omitted to add, as required by standing order, a column to the statement of Municipal Funds, showing the opening balance in each Municipal. I find that after all nothing has been really done in the Irrigation Department towards a Survey in the whole district of Beigam, and up to this moment the plans for improving the water works of Beigam have not reached me. The town of Beigam has never been surveyed and built. The plan of Beigam is in progress but no execution, or even

important arterial
communication from
the top of the Phonda
ghat through Belpuri
into the heart of the
Belgaum District. I shall
shortly submit the scheme
which ought to have been
carried out many years
ago when the Phonda ghat
was first constructed.
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The

Vara 58 ⁷⁰ The Collector has omitted
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 to the statement of Municipal
 funds, showing the opening
 balance in each Municipality.
 I find that after all nothing
 has been really done by the
 Irrigation Department
 towards a survey for the water
 supply of Belgawan, and up
 to this moment the plans
 or improving the water
 works of Belgawan have not
 reached me. The town of
 Belgawan has never been surveyed
 and little in the way of
 permanent improvement
 can be effected, or even -

important arterial
communication from
the top of the Phonda
Ghat through Nepan.
into the heart of the
Belgaum District. I shall
shortly submit the scheme
which ought to have been
carried out many years
ago when the Phonda Ghat
was first constructed.
For years past the
track for it is little
better. Has been barely
capable for carts and
in many places it
is dangerous.

The

Para 58. The Collector has omitted

to add as required

By standing orders, a Collection
to the statement of Municipal
Funds, showing the opening
balance in each Municipal
I find that after all nothing
has been really done by the
Irrigational Department
towards a survey for the water
supply of Belganni, and up
to this moment the plans
for improving the water
works of Nisara have not
reached me. The town of
Belganni has never been surveyed
and little in the way of
permanent improvement
can be effected, or even -

projected until that is done
The fact is that the Officers
of the Public Works Department
and of the Irrigational Depart-
ment are themselves very
fully occupied with their
own duties, especially since
their establishments have
been cut down. A large
town like Belgamme, can well
afford to pay special agency
for these purposes, and I
am now arranging that
it shall do so. The collector
ought to have been already
in a position to explain the
credit balance to the credit
of the Yellama Municipality.
The Belgamme Municipal
Commissioners are still obstinate
about

about the House tax. They
have some reason on their
side in the proximity
of the town of Shikarpur (which
belongs to a Native State) to
which both trade and people
would probably move, if
Belgaum were much taxed.
I do not at present see a
way out of this difficulty.
My strictures on the general
system of municipal taxation
in the Belgaum District &
the substitution of House-tax
for Octroi have had the desired
effect, however, in Yenkaums
& Eghar, where there is now
a House-tax.

21. The increase in the
[para 59 & 60]

projected, until that is done.
The fact is that the officers
of the Public works Department
and of the Irrigational Depart-
ment are themselves very
fully occupied with their
own duties, especially since
their establishments have
been cut down. A large
town, like Belgium, can well
afford to pay special agency
for these purposes, and I
am now arranging that
it shall do so. The council
ought to have been already
in a position to explain the
large balance to the credit
of the Yellama Municipality.
The Belgium Municipal
Commissioners are still doubtful
about

about the House tax. They
have some reason on their
side in the proximity
of the town of Shahapur (which
belongs to a native state) to
which both trade and people
would probably move, if
Belgaum were much taxed.
I do not at present see my
way out of this difficulty.
My strictures on the general
system of municipal taxes,
in the Belgaum District &
the substitution of House-tax
for Octroi have had the desired
effect, however, in Yenpauw
& Lohar, where there is now
a House-tax.

21 The increase in the
1845-46

projected, until that is done.
The fact is that the Officers
of the Public works Department
and of the Irrigational Depart-
-ment are themselves very
fully occupied with their
own duties, especially since
their establishments have
been cut down. It is large
town, like Belgium, can well
afford to pay special agency
for these purposes, and I
am now arranging that
it shall do so. The council
ought to have been already
in a position to explain the
large balance to the credit
of the Yellama Municipality.
The Belgium Municipal
Commissioners are still fixated
about

about the House tax. They
have some reason on their
side in the proximity
of the town of Shahapur (which
belongs to a native state) to
which both trade and people
would probably move, if
Belgaum were much taxed.
I do not at present see my
way out of this difficulty.
My strictures on the general
system of municipal taxation
in the Belgaum District &
the substitution of House-tax
for Octroi have had the desired
effect, however, in Yenkaum
& Eghar, where there is now
a House-tax.

number of Schools, and the attendance is a very healthy one, and the District Local Funds Committee have very rightly expended much of their balances on new School Houses. If there are any girls' schools, as I presume there must be, in the District, they are not mentioned by the Collector.

22 I am constrained to express my opinion that Mr Waddington has not shown himself the strong man at the helm so much needed in Belknap; his work, as evidenced for instance by this report, is performed in a slipshod and perfunctory manner

Rejoice's Report

23. ¹²/₁₀ Fleet has been more than a year at Belau and in that time he has twice acted for short terms as Collector.

24. I have been thoroughly satisfied with what I have seen of his work except in the matter (see para 8 of the letter) of the tardy disposal of lands standing in the name of absconded Ryots. His report shows him to be a painstaking official, thoroughly master of the details of his duties. His personal inspection was

number of schools and the attendance is a very healthy sign and the District Local Funds Committee have very rightly expended much of their balances on new School Houses. If there are any girls schools, as I presume there must be, in the District, they are not mentioned by the Collector

22 I am constrained to express my opinion that Mr. Waddington has not shown himself the strong man at the helm so much needed in Belfast; his work, as evinced, or instance by this report, is performed in a slipshod and pertumelory manner

Mr Fleet's Report

23. Mr Fleet has now been more than a year at Belgam and in that time he has twice acted for short terms as Collector.

24. I have been thoroughly satisfied with what I have seen of his work except in the matter (see para 8 of this letter) of the tardy disposal of lands standing in the name of absconded Ryots. His report shows him to be a painstaking official, thoroughly master of the details of his duties. His personal inspection was

number of schools and the attendance is a very healthy sign, and the District Local Funds Committee have very rightly expended much of their balances on new School Houses. If there are any girls schools, as I presume there must be, in the District, they are not mentioned by the Collector.

22 I am constrained to express my opinion that Mr. Waddington has not shown himself the strong man at the helm so much needed in Belfast; his work, as evinced, in instance by this report, is performed in a slipshod and pertumelory manner

Mr. Fleet's Report

23. Mr. Fleet has now been more than a year at Belgaum and in that time he has twice acted for short terms as Collector.

24. I have been thoroughly satisfied with what I have seen of his work except in the matter (see para 8 of this letter) of the tardy disposal of funds standing in the name of absconded Ryots. His report shows him to be a painstaking official, thoroughly master of the details of his duties. His personal inspection was

extensive and much very
searchingly made was the
more useful he has judiciously
increased the Licence tax
apportioned in Bidi & Sampdant
has properly reduced it in
Parasgad, where it was original
pitched too high. Mr Fleet
and Mr Mr Corkell^{also} have paid
a good deal of personal
attention to Birth registration,
and both propose legislation
to make it compulsory. This
is a big question, but hardly
I think now as yet for the
introduction of so strong a
measure. On the whole, —
Fleet is a very useful govern-
ment servant and I trust
he will do as easily can,

If he chooses extended personal
influence which his prestige
as a Sanscrit scholar can
not fail to give him if he
cultivates, as he should do,
cordial relations with all
natives and especially
the influential native
gentlemen in his charge
Mr Fleet will understand
this hint

Mr Mc Corkell's Report

25 Mr Mc Corkell's work
has been much better through-
out the year. He has moved
actively about his charge
and performed a goodly
amount of personal

extensive, and being very
searchingly made, was the
more useful. He has judiciously
increased the License-Tax -
apportionment in Bidi & Sampson &
has properly reduced it in
Parasgad, where it was originally
pitched too high. Mr Fleet
and Mr & Mrs Corbett ^{also} have paid
a good deal of personal
attention to "Birth Registration,
and with propose legislation
to make it compulsory. This
is a big question, not hardly
I think ripe as yet, for the
introduction of so strong a
measure. On the whole, —
Fleet is a very useful govern-
ment servant and I trust
he will, as he easily can

if he chooses extend ^{his} personal
influence which his prestige
as a Sanscrit scholar can
not fail to give him, if he
cultivates, as he should do,
cordial relations with all
natives, and especially,
the influential native
gentlemen in his charge.
Mr. Fleet will understand
this hint

Mr. Corbello's Report

25 Mr. Corbello's work
has been much better through-
out the year. He has moved
actively about his charge,
and performed a goodly
amount of personal

extensive, and being very
searchingly made, was the
more useful. He has judiciously
increased the License-Tax -
apportionment in Bidi & Samsgam &
has properly reduced it in
Parnagad, where it was originally
pitched too high. Mr Fleet
and Mr & Mrs Corke^{also} have paid
a good deal of personal
attention to Birth Registration,
and both propose legislation
to make it compulsory. This
is a big question, but hardly
I think ripe as yet for the
introduction of so strong a
measure. On the whole, —
Fleet is a very useful govern-
ment servant and I trust
he will, as he easily can

if he chooses ^{extended} personal
influence which his prestige
as a Sanskrit scholar can
- not fail to give him, if he
cultivates, as he should do,
cordial relations with all
natives, and especially,
the influential native
gentlemen in his charge.
Mr. Fleet will understand
this hint

Mr. & Mrs. Corbello's Report

25 Mr. & Mrs. Corbello's work
has been much better through-
-out the year. He has moved
actively about his charge,
and performed a goodly
amount of personal

inspection becomes all stand-
orders, and Mr. Cestambly takes
a good deal of interest in
his charge.

The District Deputy Collector's

Report.

26 Mr. Bal Krishna Deoras
having joined his appointment
only in June last, his report
which has been compiled
from the notes left by his
predecessor, Mr. Guerin, necessarily
contains nothing of interest
and is purely formal.

27 In column 2 of
the table, the figures Para 9
under "demands" have not
been given.

Para 13

inspection obeying all standing
orders, and ^{now} certainly takes
a good deal of interest in
his charge

The District Deputy Collector's

Report.

26 Mr. Balkrishna Desai
having joined his appointment
only in June last, his report
which has been compiled
from the notes left by his
predecessor, Mr. Guerin, necessarily
contains nothing of interest
and is purely formal.

27 In column 2 of
the table, the figures para 9
under "demands" have not
been given.

Para 13

Para 13. The omission to do
the second examination
of Attine Tala Ka is clearly
due to negligence on the
part of M^{rs} Guerin as
pointed out by the Collector.

Para 14. The table at the
para contains
additional particulars
about inhabited and un-
inhabited villages and hamlets
which are not required by
the model form. The last
column headed "villages in
which Birth and
Death Registers were examined"
is, however, a useful addition.

30 Out of the total number

inspection obeying all standing orders, and he ^{now} certainly takes a good deal of interest in his charge.

The District Deputy Collector's
Report.

26 Mr. Bal Krishna Deoras having joined his appointment only in June last, his report which has been compiled from the notes left by his predecessor, Mr. Guerin, necessarily contains nothing of interest and is purely formal.

27 In column 2 of the table, the figures under "demands" have not been given.

Para 3 The omission to do
the second examination
of Ituni Talika is clearly
due to negligence on the
part of Mr. Guerin, as
pointed out by the Collector

Para 14 3. The table at this
para contains -
additional particulars
about inhabited and un-
inhabited villages and hamlets
which are not required by
the model form. The last
column headed 'names of
villages in which Birth and
Death Registers were examined'
is, however, a useful addition.

30 Out of the total number

inspection, obeying all standing orders, and ^{now} certainly takes a good deal of interest in his charge.

The District Deputy Collector's
Report.

26 Mr. Bal Krishna Deorao having joined his appointment only in June last, his report which has been compiled from the notes left by his predecessor, Mr. Guerin, necessarily contains nothing of interest and is purely formal.

27 In column 2 of the table, the figures para 9 under "demands" have not been given.

Para 13

Para 13 The omission of

the second examination
of Attari Taluka is clearly
due to negligence on the
part of Mr. Guerin, as
pointed out by the Collector

Para 14 If the table at this
para contains -

additional particulars
about inhabited and un-
inhabited villages and hamlets
which are not required by
the model form. The last
column headed "villages
in which Birth and
Death Registers were examined
is, however, a useful addition

20 Out of the total number

(293) Forcages in the Chikodi
and other Talukas the accounts
of 281 villages are shown
as having been examined.
which could hardly have
been the case. It would
seem that almost all the
villages, the papers of which
came before the ^{District} Deputy Collector
at the time of Jamabandi,
have been included, which

Obviously wrong. Only the
villages the accounts of which
were personally examined
by the District Deputy Collector,
should have been shown

31 The number of in-
spections of works by Para 24
the Atmi Taluka Committee

is entered as 132 which is
must be a mistake which
should not have escaped
the collector's notice.

I
Have the honor to be

Yours most obedt Servt

Amundson
(Amundson & Co)

(293) Of villages in the Chikodi
and other Talukas, the accounts
of 281 villages are shown
as having been examined
which could hardly have
been the case. It would
seem that almost all the
villages, the papers of which
came before the ^{District} Deputy Collector
at the time of Jamabandi,
have been included. which
is obviously wrong. Only the
villages, the accounts of which
were personally examined
by the District Deputy Collector,
should have been shown

31. The number of in-
spections of works by Paras
the Atm Taluka Committee
is

is entered as 132 which
must be a mistake, which
should not have escaped
the collector's notice

I have the honor to
say,
Yours most obedt Servt
Alexander M
(Munich) 1870

(293) Of villages in 'the Chikodi' and 'the Talukas', the accounts of 281 villages are shown as having been examined which could hardly have been the case. It would seem that almost all the villages, the papers of which came before the ^{District} Deputy Collector at the time of Yamavundi, have been included, which is obviously wrong. Only the villages, the accounts of which were personally examined by the District Deputy Collector, should have been shown.

31. The number of inspections of works by Pasas, the Atani Taluka Committee

is entered as 132 which
must be a mistake which
should not have escaped
the collector's notice

I
Have the honor to be
Sir,
Yrs most obedt Servt
Alexander M
Munro

No 2012 of 1880. 27

Dear,

G. Waddington Esquire,
Acting Collector and District
Magistrate.

Belgaum

Sr,

A. T. Crawford Esquire

Commissioner & Co.

Sir,

Belgaum 21st July 1880.

I have the honor to submit
the Annual Report on the Adminis-
tration of this District for the Reve-

Area in square miles. Population ac-
cording to cen-
sus of 1872.

one year

Collectorate 4591 938750 which term
Native States

terminated on

the 30th June 1880. This District was
under my charge throughout the
whole

Dec. 2/8/80

1981B

No 2012 of 1880. 27

From,

G. Waddington Esquire
acting Mayor and District
Magistrate.

Belgaum.

To,

A. D. Crawford Esquire

Commissioner S. P.

Sir,

Belgaum 24th July 1880.

I have the honor to submit:

the Annual Report on the Admini-
stration of this District for the year

Area & Population as
square miles ending to the 31st Dec 1879

Population 40,91 93,8700 which is an
increase of

100,000

in the District was

Recd. 2/8/80

1981B

No 2012 of 1880. 27

From,

G. Washington Esquire
Acting Quarter and District
Magistrate.

To,

Belgaum

A. T. Crawford Esquire

Commissioner S. C.

Sir,

Belgaum 24th July 1880.

I have the honor to submit
the Annual Report on the adminis-
tration of this District for the Reve-

Area in square miles	Population according to census of 1872
----------------------	--

one year

Madrass District	4591	938750	which were
------------------	------	--------	------------

located on

the 30th June 1880 This District was
under my charge throughout the
whole

whole year except for one month
from the 19th November to the 8th
December 1879 when I was on
privilege leave. During this time
Mr. J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2 The following Officers have
been at my disposal during the year
of report and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector

1. Senior Deputy Collector

1. Cantonment Magistrate

There have been but very few changes in the personnel of my Assistants during the year. Messrs. Flut and McForkell have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector was on duty from the beginning of the year till he proceeded on two years' furlough on the 15th April 1880. Rao Bahadoor G. S. Desai was appointed by Government to succeed

whole year except for one month
from the 19th November to the 8th
December 1879, when I was on
written leave. During this time
Mr. J. L. Fleet 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2 The following Officers have
been at my disposal during the year
of report and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Director

1. Deputy Director

1. Cantonment Magistrate

There have been but very few changes in the personnel of my Assistants during the year. Messrs Hunt and McKell have been serving in the District through out the whole year. Mr. J. A. Guerin, District Deputy Director was on duty from the beginning of the year till he proceeded on two years furlough on the 15th April 1880. Rao Bahadur Bal. Krishna Desai who was appointed by Government to succeed

whole year except for one month,
from the 19th November to the 8th
December 1879, when I was on
privilege leave. During this time
Mr J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2. The following Officers have
been at my disposal during the year
of report, and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector

1. District Deputy Collector

1. Deputy Collector

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my assistants during the year. Messrs Fleet and McFarrell have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years' furlough on the 15th April 1880. Rao Bahadur Palenshna Deoras who was appointed by Government is in

whole year except for one month,
from the 19th November to the 8th
December 1879, when I was on
privilege leave. During this time
Mr J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2. The following Officers have
been at my disposal during the year
of report, and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector
1. Deputy Collector.
1. Cantonment Magistrate

There have been but very few changes in the personnel of my Assistants during the year. Messrs Fleet and McForkell have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector was on duty from the beginning of the year till he proceeded on two years' furlough on the 15th April 1880. Rao Bahadur Pal-
 .enshna Deoras who was ap-
 -ointed by Government is in

whole year except for one month from the 19th November to the 8th December 1879, when I was on privilege leave. During this time Mr J. F. Fleet, 1st Assistant Collector acted for me.

There are no Native States in the Collector's charge in this District.

2. The following Officers have been at my disposal during the year of report and the manner in which their services have been utilized is shown in Appendix A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector.

1. Muzur Deputy Collector.

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my Assistants during the year. Messrs Fleet and McForkall have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years' furlough on the 15th April 1880. Rao Bahadur Palanbhai Deoras who was appointed by Government to succeed

whole year except for one month,
from the 19th November to the 8th
December 1879, when I was on
privilege leave. During this time
Mr J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2. The following Officers have
been at my disposal during the year
of report, and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector

1. Muzur Deputy Collector.

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my Assistants during the year. Messrs Fleet and McForkell have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years furlough on the 15th April 1880. Rao Bahadur Pal-
-enshwa Deoras who was ap-
-pointed by Government is injured

whole year except for one month,
from the 19th November to the 8th
December 1879, when I was on
privilege leave. During this time
Mr J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2. The following Officers have
been at my disposal during the year
of report, and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector

29

1. Kungur Deputy Collector.

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my assistants during the year. Messrs Fleet and McForkell have been serving in the District through out the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years furlough on the 15th April 1880. Rao Bahadur Bal Krishna Deoras who was appointed by Government in lieu

whole year except for one month, from the 19th November to the 8th December 1879, when I was on privilege leave. During this time Mr. J. F. Fleet, 1st Assistant Collector acted for me.

There are no Native States in the Collector's charge in this District.

2. The following Officers have been at my disposal during the year of report, and the manner in which their services have been utilized is shown in Appendix A annexed to this Report.

1. 1st Assistant Collector.

1. Superannuated Assistant Collector.

1. District Deputy Collector

29

1. Deputy District Collector.

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my Assistants during the year. Messrs Fleet and McCall have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years furlough on the 15th April 1880. Rao Bahadur Bal Krishna Deoras who was appointed by Government in 1877

whole year except for one month,
from the 19th November to the 8th
December 1879, when I was on
privilege leave. During this time
Mr. J. F. Fleet, 1st Assistant Col-
lector acted for me.

There are no Native States
in the Collector's charge in this District.

2. The following Officers have
been at my disposal during the year
of report, and the manner in
which their services have been
utilized is shown in Appendix
A annexed to this Report.

1. 1st Assistant Collector.

1. Supernumerary Assistant Collector.

1. District Deputy Collector.

1. Deputy Collector.

1. Cantonment Magistrate.

There have been but very few changes in the personnel of my Assistants during the year. Messrs Fleet and McForkell have been serving in the District throughout the whole year. Mr. J. A. Guerin, District Deputy Collector, was on duty from the beginning of the year till he proceeded on two years furlough on the 15th April 1880. Rao Bahadur Palanappa Desai who was appointed by Government Engineer

him only joined his appointment
in the 9th Instant having obtain-
ed privilege leave for 2 months
and 17 days from the date
of delivering over charge of his
Office at Kaladgi. The District
Deputy Collector's charge during the
interim was divided between
Messrs Fleet and M. Forkell the
former retaining charge of the
District Deputy's Office with the
Revenue and Magisterial duties
of the Chikode Taluka and the
latter taking over charge of the
Althi Taluka.

3. The Administration Reports
of

of the Officers in charge of Sections are herewith forwarded accompanied with my remarks on each.

II General Information and

Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgavia, the Head Quarters Station of the District, during 1879-80 was

inches	cents
48	61

while the average for the preceding five years is

inches	cents
51	74

as shown in the mar

Rainfall at Head Quarters	
Average of pre- ceding 5 years	Current year

51.74. 48.61.

The rainfall at

original table.

him only joined his appointment on the 9th instant having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy-Sector's charge during the interim was divided between Messrs Fleet and McForkell the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka and the latter taking over charge of the Athur Taluka.

3. The Administration Reports of
of

of the Officers are clear of serious nature. The forwarded accompanied with my remarks on each.

II General Condition and Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgaum the Head Quarters Station of the District, during 1879-80, was
 inches cents
 48 — 61, while the average for the preceding five years is
 inches cents
 51 — 74, as shown in the mar.

Rainfall at Head Quarters	
Average of pre- ceding 5 years	Current year

51.74. 48.61

The rainfall at

him, only joined his appointment on the 9th Instant having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy Collector's charge, during the interim, was divided between Messrs Fleet and McForkell, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka, and the latter taking over charge of the Altani Taluka.

3. The Administration Reports
of

him, only joined his appointment on the 9th instant, having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy Collector's charge, during the interim, was divided between Messrs Fleet and McForkell, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodsee Taluka, and the latter taking over charge of the Athur Taluka.

3. The Administration Reports
of

of the Officers in charge of Divisions are herewith forwarded, accompanied with my remarks on each.

II General Condition and Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgama, the Head Quarters Station of the District, during 1879-80, was

inches	cents	
48	61	where the average for the preceding five years is
inches	cents	
51	74	as shown in the near

Rainfall at Head Quarters

Average of pre	Current	Year	Year	Year
ending 5 years				
51.74	48.61			

him, only joined his appointment on the 9th Instant, having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy Collector's charge, during the interim, was divided between Messrs Fleet and Worsfold, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka, and the latter taking over charge of the Athur Taluka.

3. The Administration Reports of of

of the Officers in charge of Divisions are herewith forwarded, accompanied with my remarks on each.

II General Condition and Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgawan, the Head Quarters station of the District, during 1879-80, was

inches	cents
48	61

while the average for the preceding five years is

inches	cents
51	74

as shown in the margin.

Rainfall at Head Quarters

Average of preceding 5 years	Current year
51.74	48.61

General table.

him, only joined his appointment on the 9th Instant having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy Collector's charge, during the interim, was divided between Messrs Fleet and McForkell, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka, and the latter taking over charge of the Altni Taluka.

3. The Administration Reports of

of the Officers in charge of Surveys are herewith forwarded accompanied with my remarks on each.

II General Condition and Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgam, the Head Quarters Station of the District, during 1879-80, was

inches	cents
48	61

while the average for the preceding five years is

inches	cents
51	74

as shown in the mar.

Rainfall at Head Quarters

Average of pre. Current
ceding 5 years year general table

51.74 48.61

him, only joined his appointment on the 9th Instant, having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy Sectors charge, during the interim, was divided between Messrs Fleet and McForkell, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka, and the latter taking over charge of the Athur Taluka.

3. The Administration Report
of

of the Officers in charge of Simo-
-simo are herewith forwarded,
accompanied with my remarks
on each.

II General Condition and Resources.

4. Season and Rainfall—The
total rainfall registered at the
Civil Hospital at Belgam, the
Head Quarters Station of the
District, during 1879-80, was

inches	cents
48	61

 while the average for
the preceding five years is

inches	cents
51	74

 as shown in the mar-
-rainfall at Head Quarters
Average of pre Current
ceding 5 years year general table

51.74	48.61
-------	-------

him, only joined his appointment on the 9th Instant having obtained privilege leave for 2 months and 17 days from the date of delivering over charge of his Office at Kaladgi. The District Deputy's charge, during the interim, was divided between Messrs Fleet and McCorkell, the former retaining charge of the District Deputy's Office with the Revenue and Magisterial duties of the Chikodee Taluka, and the latter taking over charge of the Altani Taluka.

3. The Administration Reports of

of the Officers in charge of divisions are herewith forwarded accompanied with my remarks on each.

II General Condition and Resources.

4. Season and Rainfall—The total rainfall registered at the Civil Hospital at Belgama, the Head Quarters Station of the District, during 1879-80, was

inches	cents
48	51

while the average for the preceding five years is

inches	cents
51	74

as shown in the margin.

Rainfall at Head Quarters

Average of pre ceding 5 years	Current year	General total
51.74	48.51	

each Taluka Station as calculated
from the 1st April to the 31st March.
and as compared with the pre-
vious year, is shown below-

No.	Talukas	Year			
		1878-79		1879-80.	
		inches	cents	inches	cents
1.	Sampgaum	29	1	35	73
2.	Bidi	64	24	70	99
3.	Chikooan	37	24	32	23
4.	Paragad	35	61	27	03½
5.	Gokak	30	68	21	.
6.	Attur	30	74	20	87

The monsoon broke very early
during the season under report
and there was rain almost every
day during the second fortnight
of May and consequently sowing
operations were commenced early.
Su

each Taluka Station as calculated
from the 1st April to the 31st March,
and as compared with the pre-
vious year is shown below—

No.	Talukas	Year			
		1878-79		1879-80	
		inches	cents	inches	cents
1.	Saunpaganur	29	1	35	73
2.	Bidi	64	24	70	99
3.	Chikode	37	24	32	23
4.	Paragur	35	61	27	03½
5.	Gokak	30	68	21	.
6.	Attem	30	74	20	87

The monsoon broke very early
during the season under report,
and there was rain almost every
day during the second fortnight
of May and consequently sowing
operations were commenced early.

In June the rainfall was seasonable throughout the greater part of the District, and consequently it was deficient in July, and in the Talukas the sowing of the early or Kharif crops was nearly completed. In August there was an excessive fall in Belgam, Sangli, Solapur and Bidri, and the crops in these Talukas suffered to some extent; while in Paragad and Jorok, and in parts of the Altani and Chikoda Talukas, the crops were threatened with damage by rats. But early and prompt measures were taken for

each Taluka Station as calculated
from the 1st April to the 31st March,
and as compared with the pre-
vious year, is shown below—

No.	Talukas	Year			
		1878-79		1879-80	
		inches	cents	inches	cents
1.	Sampgaum	29	1	35	73
2.	Pidi	64	24	70	99
3.	Chikodae	37	24	32	23
4.	Paragad	35	61	27	03½
5.	Gokak	30	68	21	.
6.	Attemi	30	74	20	87

The monsoon broke very early
during the season under report,
and there was rain almost every
day during the second fortnight
of May and consequently sowing
operations were commenced early.
Su

In June the rainfall a
seasonable throughout the greater
part of the District. and though
it was deficient in July in some
Talukas, the sowing of the early
or Kharif crops was nearly com-
pleted. In August there was an
excessive fall in Belgam, Sam-
gam, and Bidi, and the crops
in those Talukas suffered to some
extent; while in Paragad and
Jokak, and in parts of the
Altam and Chikoda Talukas, the
crops were threatened with
damage by rats. But early and
prompt measures were taken for

the destruction of these vermin and
were successful. From the
beginning of August up to the
15th October 135226 rats were killed
and the amount of rewards
paid on that account was Rs
'352-3-5'. Also large numbers
of rats were probably destroyed
by cultivators and others who
did not apply for any rewards.
Though at one time the prospect
was anything but favourable,
yet it does not appear that
the crops were ultimately
damaged to any serious extent
by their nest

On the whole the season
was a favorable one. In the
Belfarim and Sanisyanu Talu-
kas the rotation of the Kharif
crop was 12 and 14 annas in
the Rupur respectively; while in
the Bidi Taluka where the rain
was more copious, the
yield of the crops was short; viz:-
Rice, 8 annas; Jowari, 11 as; and
Bajri, 11 as; but the sugarcane
proved to be a bumper crop. In
Chikodee the outturn of rice was
12 annas; and that of Jowari
and Bajri 14 annas each. In the
Lohak and Bhat Talukas 7.

the destruction of these vermin and
were successful. From the
beginning of August up to the
15th October, 135,226 rats were killed
and the amount of rewards
paid on that account was Rs
1352-3-5. Also large numbers
of rats were probably destroyed
by cultivators and others who
did not apply for any rewards.
Though at one time the prospect
was anything but favourable,
yet it does not appear that
the crops were ultimately
damaged to any serious extent
by their nest.

On the whole the season
was a favourable one. In the
Belgaum and Sanjayaram Talu.
- has the out. turn of the Kharif
crop was 12 and 14 annas in
the Rupur respectively; while in
the Bidli Taluka where the rain
was more copious, the
yield of the crops was short; viz:-
Rice, 8 annas; Jowari, 11 as; and
Bajri, 11 as; but the sugarcane
proved to be a bumper crop. In
Chikode the outturn of rice was
12 annas; and that of Jowari
and Bajri 14 annas each. In the
Khar and Bidli Talukas the

crops suffered from a deficiency
of rain when it was much want
ed and the yield in these Pahr.
Kas was respectively 10 annas
and 8 annas. But in the Paras
gad Taluka the out. turn averaged
from 12 to 14 annas.

The rabi sowing was re-
tarded in the early part of
September, by want of rain,
but in October the fall of rain
was seasonable and sowing opera-
tions were completed. The out. turn
of Jowari in the Sambharam
Taluka was 12 annas, and in
Chikodi 14 annas. but in the
Paragad,

Crassad Gohak and Altun
Talukas it was only 8 annas and
below. The wheat crop averaged
12 annas in Samsar and 14 annas
in Bhukodi, 14 annas in Param.
12 annas in Gohak, 8 annas in
Altun, and only 6 annas in
the Belgam Taluka. The int. turn
of other crops in all the Talukas
excepting Bidri, Belgam and
Altun averaged from 10 to 14 annas
in the Belgam and Bidri Talukas
rabi crops are not grown to any
great extent. In the Altun Taluka
the yield was only 8 annas.

crops suffered from a deficiency
of rain. when it was much want-
ed and the yield in these Pals.

Kas. was respectively 10 annas
and 8 annas. But in the Paras.
-gad Paluka the out. turn averaged
from 12 to 14 annas.

The rain's sowing was re-
tarded in the early part of
September by want of rain,
but in October the fall of rain
was reasonable and sowing opera-
tions were completed. The out. turn
of Jowari in the Sambharam -
Paluka was 12 annas, and in
Chikodi, 14 annas; but in the
Parasgad

Paragan, Gokak and Altuni
Palukas, it was only 8 annas area
below. The wheat crop averaged
12 annas in Samyannu, 14 annas
in Chikodi, 14 annas in Paragan,
12 annas in Gokak, 8 annas in
Altuni, and only 6 annas in
the Belyannu Paluka. The out. turn
of other crops in all the Palukas
excepting Bidi Belyannu and
Altuni averaged from 10 to 14 annas;
in the Belyannu and Bidi Palukas
cabi crops are not grown to any
great extent. In the Altuni Paluka
the yield was only 8 annas.

The rural population

of the District from the village
census taken in July 1879 was

779,776	July 1878	July 1879	1878-79	
			Births	Deaths
This shows	792,252	779,776	15,470	29,609

a very large decrease as compared
with the population according to the
Imperial Census of 1872. The figures
of that census were maintained
tolerably closely up to July 1877,
when the total population according
to the Annual Village Census was
928,052. But the decrease since
then is to be attributed directly
to the Famine which commenced
in that year, is shown by the
fact

fact that the population fell in 1877 to 85,832 and in 1878 to 79,252. During these years in addition to a larger than usual decrease by death, large numbers of people left the District to obtain employment and subsistence elsewhere and have either died away from their homes or have not yet found it convenient to return and have been entered as "dead" by the Village Accountants, where probably the entry of "absent" would have been more correct.

I believe that the results of the Annual Village Censuses are fairly accurate.

5. The rural population
of the District from the village
census taken in July 1879, was

779,776. July 1878 July 1879 ^{1878-79.}
Births Deaths
This shew. 792,252 779,776. 16,470. 29,609

a very large decrease as compared
with the population according to the
Imperial Census of 1872. The figures
of that census were maintained
tolerably closely up to July 1877, -
when the total population according
to the Annual Village Census was
928,052. That the decrease since
then is to be attributed directly
to the Famine, which commenced
in that year, is shewn by the
fact

fact that the population fell
 1877 to 858,329, and in 1878 to
 792,252. During these years, in
 addition to a larger than usual
 decrease by death, large numbers
 of people left the District to obtain
 employment and subsistence else-
 where, and have either died
 away from their homes or have
 not yet found it convenient
 to return and have been entered
 as "dead" by the Village Accountants,
 where probably the entry of "absent"
 would have been more correct.

I believe that the results of the
 Annual Village Census are more

5. The rural population,
of the District from the village
census taken in July 1879, was

779,776.	July 1878	July 1879	1878-79	
			British	Seattle
This shows	792,252.	779,776	16,470.	29,609

very large decrease as compared
with the population according to the
Imperial Census of 1872. The figures
of that census were maintained
tolerably closely up to July 1877, -
when the total population according
to the Annual Village Census was
728,052. That the decrease since
then is to be attributed directly
to the Famine which commenced
in that year, is shown by the
fact

fact that the population fell in 1877 to 858,329 and in 1878 to 792,252. During these years in addition to a larger than usual decrease by death, large numbers of people left the District to obtain employment and subsistence elsewhere, and have either died away from their homes or have not yet found it convenient to return and have been entered as 'dead' by the Village Accountants, where probably the entry of 'absent' would have been more correct.

I believe that the results of the Annual Village Censuses are fairly accurate

accurate and reliable so far as
deaths are concerned, but that

from want of information being
given by the Parents numbers of
births occur without being entered
in the Registers. Every opportunity
has been taken by my Assist-
ants and by myself of exa-
mining these Registers at the
same time with the other Village
Records,—or testing them by
questions to the Ryots whenever
the latter were present for the exa-
mination of Receipt books,—
and of impressing upon the
Village Officers the great importance
of

of keeping them accurately. But
I do not see how though ac-
curacy is to be obtained unless
the omission to give informa-
tion of births and deaths
made an office unworkable
summarily. Stringent orders
have been issued from my
office to all village officers on the
subject of the taking of the Census
in the present month, and
the returns will have to be used
in the Imperial Census of Delans
next for checking the present
mortality in the census.

accurate and reliable so far as
deaths are concerned, but that
from want of information being
given by the Parents, numbers of
births occur without being entered
in the Registers. Every opportunity
has been taken by my Assist-
ants and by myself of exa-
mining these Registers at the
same time with the other Village
Records,—or testing them by
questions to the Ryots whenever
the latter were present for the exa-
mination of Receipt books,—
and of impressing upon the
Village Officers the great importance
on

of keeping them accurately. But
I do not see how, though ac-
curacy is to be obtained, under
the impression to "give informa-
tion of births and deaths is
made an office unworkable
summarily. Stringent orders
have been issued from my
office to all village officers on the
subject of the taking of the Annual
Census in the present month, as
the returns will have to be used
in the Imperial Census of Dehra,
next for checking the prelimi-
nary returns in the censuses.

accurate and reliable so far as
deaths are concerned, but that
from want of information being
given by the parents, numbers of
births occur without being entered
in the Register. Every opportunity
has been taken by my assist.
ants and by myself of exa-
mining these Registers at the
same time with the other Village
Records,— of testing them by
questions to the Ryots whenever
the latter were present for the exa-
mination of Receipt books,—
and of impressing upon the
Village Officers the great importance

of keeping them accurately. But
I do not see how though ac-
curacy is to be obtained, unless
the omission to give informa-
tion of births and deaths
made an offence punishable
summarily. Stringent orders
have been issued from my
office to all village officers on the
subject of the taking of the Annual
Census in the present month, as
the returns will have to be used
in the Imperial Census of Delémur
next for checking the prelimi-
nary returns in the censuses.

tor's Schedules.

6. Public Health. The

figures in the margin show, that

there was an

increase of only

476 in the number

of patients attend-

ing the Charitable Dispensaries during the

year. The gradual increase in the number

of patients attending the Dispensaries shows

that these institutions are gradually

growing ~~the~~ more and more in popu-

lar favour. At present there are

only four Dispensaries in this

district, viz: at Pelyann, Gyokak,

Althen and Loundatti; a fifth

	1878-79	1879-80
Dispensaries	4	4
Inpatients	42	104
Outpatients	20,056	20,470

at Nipani. It has been under
 contemplation for the last four
 or five years, and applications
 have been made to Government
 for a grant in aid towards
 its maintenance, but it has
 been found impracticable to
 give the assistance asked for.
 Plans and Estimates for the
 Dispensary building have long
 since been prepared, and, in
 the application made to you in
 the month of May last, it was
 stated that the Municipality
 had promised to bear half
 the cost of the building, - that a-

tor's Schedule.

6. Public Health. The

figures in the margin show that

there was an

		1878-79	1879-80
increase of only	Dispensaries	4	4
	Inpatients	42	104
476 in the number	Outpatient	20,056	20,470

of patients attend.

ing the Charitable Dispensaries during the

year. The gradual increase in the number

of patients attending the Dispensaries shows

that these institutions are gradually

growing in more and more in popu-

lar favour. At present there are

only four Dispensaries in this

District, viz: at Belgam, Lyokak,

Althar and Soudatti, &c. &c.

at Nipawin has been under
 contemplation for the last four
 or five years and applications
 have been made to Government
 for a grant-in-aid towards
 its maintenance, but it has
 been found impracticable to
 give the assistance asked for.
 Plans and estimates for the
 dispensary building have long
 since been prepared, and in
 the application made to you in
 the month of May last, it was
 stated that the Municipality
 had promised to bear half
 the cost of the building, — that it

tor's Duties.

6. Public Health. The

figures in the margin show that

there was an

		1878-79	1879-80
increase of only	Dispensaries	4	4
	Inpatients	42	104
476 in the number	Outpatients	20,056	20,470

of patients attend.

ing the Charitable Dispensaries during the

year. The gradual increase in the number

of patients attending the dispensaries shows

that these institutions are gradually

growing in more and more in popu.

lar favour. At present there are

only four dispensaries in this

district, viz: at Belgam, Gyokar,

Altur and Soudatti, a little

at Kipawa has been under contemplation for the last four or five years and applications have been made to Government for a grant in aid towards its maintenance, but it has been found impracticable to give the assistance asked for. Plans and estimates for the dispensary building have long since been prepared, and, in the application made to you in the month of May last, it was stated that the Municipality had promised to bear half the cost of the building, — that it

was

was proposed to provide the other
half from Local Funds, — and
that what was asked from
Government was the annual grant
in aid towards the maintenance
of the institution. But under
your instructions, the question
of the Dispensary has been put
aside for the present, until the
question of the water supply of
the Town of Nipawin has been
disposed of.

Cholera did not make its
appearance at all; and, with
the exception that fever was very
much more prevalent than usual,
especially

especially in the San Francisco
 District, the public health during
 the year under report was good

7. Vaccination.

The table given in the mar-
 gin shows the progress made

Note - The figures
 given here are taken
 from the monthly
 returns received
 from the Vaccina-
 tion Department
 but they slightly
 differ from those
 given by the Dy.
 Secretary Commis-
 sioner in his Report
 which shows -
 Primary vaccinee
 15329
 Revaccination 328

	1878-79	1879-80.
Primary	13859	15706
Revaccination	192	328

by the Vaccination
 Department dur-
 ing the year

ending on the 31st March 1880, as com-
 pared with the previous year.

It is satisfactory to observe that
 the number of primary vaccina-
 tion has increased by 1847 over
 the number for the preceding year.

There are eleven Local Funds
 Vaccination

was proposed to provide the other half from Local Funds, — and that what was asked from Government was the annual grant in aid towards the maintenance of the institution. But under your instructions, the question of the Dispensary has been put aside for the present, until the question of the water supply of the Town of Nipani has been disposed of.

Cholera did not make its appearance at all; and, with the exception that fever was very much more prevalent than usual, especially

especially in the Sanby ann-
 Polio, the public health during
 the year under report was good.

7. Vaccination.

The table given in the mar-
 gin shows the progress made

Note - The figures given here are taken from the monthly return. rec. and from the Vaccina- tion Dep. and as they slightly differ from those given by the Dy. Secretary Commis- sioner in his Report which shows: Primary Vaccina- tion 18829 Revaccination 18837		1878-79	1879-80.	by the Vaccination Department du- ring the year ending on the 31 st March 1880, as com- pared with the previous year.
	Primary	13859	15706	
	Revaccination	192	328	

It is satisfactory to observe that
 the number of primary vaccina-
 tion has increased by 1847 over
 the number for the previous year.
 There is a small local fund.

was proposed to provide the other
half from Local Funds, — and
that what was asked from
Government was the annual grant
in aid towards the maintenance
of the institution. But under
your instructions, the question
of the Dispensary has been put
aside for the present, until the
question of the water supply of
the Town of Nipawin has been
disposed of.

Cholera did not make its
appearance at all; and, with
the exception that fever was very
much more prevalent than usual (
especially,

especially in the San Francisco
 Polio, the public health during
 the year under report was good.

7. Vaccination.

The table given in the mar-
 gin shows the progress made

* Note - The figures
 given here are taken
 from the monthly
 returns received
 from the Vaccina-
 tion Department
 and they slightly
 differ from those
 given by the
 Sanitary Commission
 in its Report
 which shows
 Primary Vaccina-
 tion 13,859
 Revaccination 192

	1878-79	1879-80	by the Vaccination Department du- ring the year ending on the 31 st March 1880, as com- pared with the previous year.
Primary	13,859	15,706	
Revaccination	192	328	

It is satisfactory to observe that
 the number of primary vaccina-
 tion has increased by 1847 over
 the number for the preceding year.
 There is

Vaccinator, in this District Be-
sides these, the Hospital Assistant
in charge of the Dispensaries at
Altni, Lyskak, and Sundath;
vaccinate in those Towns. This
makes in all 15 vaccinators.

Taking the work of the whole of
these together, each vaccinator
would appear to have vaccina-
ted on an average 1047 children,
and revaccinated 22, against
924 and 13 respectively during
the preceding year.

8. Agricultural Stock

As will be seen from the
marginal

marginal table, the number of

years	Cattle	Horses and Ponies	Sheep and Goats	Pigs	Cattle, horses and sheep in
1878	320,267	50,30	186,095	20,223	increased
1879	340,926	53,68	196,268	19,998	considerably
Increase Decrease	20659	338	10173	225	

by during the year, while the number of Pigs has slightly decreased. Fuller details of these figures will be found in Appendix B. The increase in the live stock appears to be the result of returning prosperity.

9. The price of labour has remained stationary during the year

Vaccinators, and one municipal
vaccinator, in this District. Re.

Besides these, the Hospital Assistants
in charge of the Dispensaries at
Attuni, Gokak, and Sandatti;
vaccinate in those Towns. This
makes in all 15 vaccinators.

Taking the work of the whole of
these together, each vaccinator
would appear to have vaccina-
ted on an average 1047 children,
and revaccinated 22, against
924 and 13 respectively during
the preceding year.

8. Agricultural Stock

As will be seen from the
marginal

marginal table, the number of

Years	Cattle	Horses and Ponies	Sheep and Goats	Carts	Cattle, horses and sheep in
1878	320,267	50,30	186,095	20,223	
1879	340,926	53,58	196,268	19,998	increased
Increase	20,659	3,38	10,173	.	
Decrease	"	"	"	225	considerably

by dividing the year, while the number of carts has slightly decreased. Fuller details of these figures will be found in Appendix B. The increase in the live stock appears to be the result of returning prosperity.

9. The price of labour has remained stationary during the

Vaccinators, and one municipal
vaccinator, in this District. Be-

sides these, the Hospital Assistants
in charge of the Dispensaries at
Altuni, Gyokak, and Samdatti;
vaccinate in those Towns. This
makes in all 15 vaccinators.

Taking the work of the whole of
these together, each vaccinator
would appear to have vaccina-
ted on an average 1047 children,
and re-vaccinated 22, against
924 and 13 respectively during
the preceding year.

8. Agricultural Stock

As will be seen from the

marginal table, the number of

years	Cattle	Horses and Ponies	Sheep and Goats	Pigs	Cattle, horses and
-------	--------	-------------------	-----------------	------	--------------------

1878	320267	5030	186095	20223	
------	--------	------	--------	-------	--

1879	340926	5368	196268	19998	
------	--------	------	--------	-------	--

Increase	20659	338	10173		
Decrease				225	

increased

considerably

by during the year, while the number of pigs has slightly decreased. Fuller details of these figures will be found in Appendix B. The increase in the live stock appears to be the result of returning prosperity.

9. The price of labour has

year, and calls for no remark,

except that,

laborers

being plenty.

Year	Wages per diem		Cart hire		Pack bullocks + ponies	
	Skilled	unskilled	Diem			
1878-79	8	3	12		8	
1879-80	8	3	12		8	

ful through.

out the District, no variation in the rates appears probable.

10. The Prices of Produce.

A few of the more general articles of consumption are given

in the margin,

but the whole will

be found in App.

Appendix C to this

Report. It will

be seen that all

Articles	Quantity per Bullock per standard day			
	on 31st March/77		on 31st Mar/1878	
Wheat	5	23	9	33
Sell	6	12	11	51
Rice common	10	.	11	34
Jowari	9	41	18	.
Rajri	12	29	16	47

the articles were sold at a far cheaper rate on the 31st March 1880 than they were on the corresponding date in the previous year. And though it cannot be said that the prices of grain have as yet returned to their normal rates, nevertheless they are still falling, and the prospects of the current season incline me to believe that they will steadily continue to do so.

11

Dakari Advances.

years	Seed Cattle res.	Permanent Improvement	A small sum of Rs 100 only has been advanced
1878-79	381	500	
1879-80	,	12.	

year, and calls for no remark,

except that,

labourers

being plenty.

Year	Wages per diem				Cartage		Price	
	Skilled		unskilled		diem		bullocks + horses	
1878-79	8		3		12		8	
1879-80	8		3		12		8	

but through-

out the district, no variations in the rates appears probable.

10. The Prices of Produce.

A few of the more general articles of consumption are given

in the margin,

but the whole will

be found in App.

Appendix C to this

Report. It will

be seen that all

the

Articles	Quantity per Batta per standard set			
	on 31 st March/79		on 31 st March/80	
Wheat—	5	23	9	33
Oat—	6	12	11	51
Rice common	10		11	34
Jowari—	9	41	18	
Bajri—	12	29	16	47

the articles were sold at a far
 cheaper rate on the 31st March 1881
 than they were on the corresponding
 date in the previous year. And
 though it cannot be said that
 the prices of grain have as
 yet returned to their normal
 rates, nevertheless they are still
falling, and the prospects of
 the current season incline me
 to believe that they will steadily
 continue to do so.

11 Pakar Advances

years	Seed Cattle vs	Permanent Improvement	A small sum of
1878-79	381	511	Rs 100 only to a.
1879-80	.	.	.

year, and calls for no remark,

Year	Wages per diem				Cart per diem	Pack bullocks + ponies
	Skilled	unskilled	Skilled	unskilled		
1878-79	8	3	12	8		
1879-80	8	3	12	8		

ful through.

out the District, no variations in the rates appears probable.

10. The Prices of Produce.

A few of the more general articles of consumption are given

in the margin,

but the whole will

Articles

Quantity per Batta
per standard Seer

on 31st March/79 on 31st March/80

be found in App.	Wheat	Seer	23	Seer	23
		5	9	5	33
	Sall	6	12	11	51
Vendor C to this	Rice common	10	11	34	
Report. It will	Jowari	9	41	18	
	Rajri	12	29	16	47

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the

47

the articles were sold at a far
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the prices of grain have as
yet returned to their normal
rates, nevertheless they are still
falling, and the prospects of
the current season incline me
to believe that they will steadily
continue to do so.

11

Pakari Advances.

Years	Seed Cattle vs.	Permanent Improvement	A Small Sum of
1878-79			Rs. 500 only was
1879-80			been advanced

during the year under the Land
Improvement Act. As stated in
the last report the rules for granting
these advances are too rigid to
meet the convenience of the ryots,
and therefore they prefer borrow-
ing money from Sowkars at
even higher rates of interest than
those at which the Government
will advance them money. I
have personally taken every
opportunity of informing the ryots
of the willingness of Government
to grant advances but my repre-
sentations appeared to create
no interest. In the Parasged Taluka,
there

there was an outstanding balance under this Head of Rs 650 which was collected during the year. In the Lyokah Taluka there was an outstanding balance of Rs 2292-1-4, of which the 1627-1-4 was collected during the year. In the revenue collection on account of outstanding balance of previous year were made to the extent of Rs 2462-8-3, and there remained an outstanding balance of Rs 1683-... It is not understood from ^{the} reports received whether these balances are only on account of instalments due in future years or